

## SEARCH REQUEST FORM

## Scientific and Technical Information Center

CP3 10E-12

Requester's Full Name: Lynette T. Umez-Ervin Examiner #: 74987 Date: 11/18/02  
 Art Unit: 1765 Phone Number 30 Serial Number: 09/678793  
 Mail Box and Bldg/Room Location: CP3-10E12 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Cleaning agent for semiconductor device and method of fabricating semiconductor device  
 Inventors (please provide full names): Itaru Kanng, Naoki Yokoi, Hiroshi Morita

Naoki Ichiki, Hideaki Nezu, and Masayuki Takashima

Earliest Priority Filing Date: 10/6/1998

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Search claims 1-3 and

Search  $\text{HO}-(\text{EO})_x-(\text{PO})_y-\text{H}$  and

$\text{R}-[\text{E}(\text{EO})_x(\text{PO})_y-\text{H}]_m$

with "semiconductor" cleaning  
etching or etchant

See attached pp. 7-9

\*\*\*\*\*  
**STAFF USE ONLY**  
 Searcher: EJ  
 Searcher Phone #: \_\_\_\_\_  
 Searcher Location: \_\_\_\_\_  
 Date Searcher Picked Up: \_\_\_\_\_  
 Date Completed: 11-21-02  
 Searcher Prep & Review Time: 10  
 Clerical-Prep Time: \_\_\_\_\_  
 Online Time: 85

Type of Search	Vendors and cost where applicable
NA Sequence (#)	STN <u>\$142.29</u>
AA Sequence (#)	Dialog _____
Structure (#)	Questel/Orbit <u>(2)</u>
Bibliographic	Link <u>Questel</u>
Litigation	Lexis/Nexis _____
Fulltext	Sequence Systems _____
Patent Family	WWW/Internet _____
Other	Other (specify) _____

WHAT IS CLAIMED IS:

L11 = L18

5

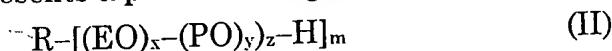
10

(RN)

1. A cleaning agent for a semiconductor device containing a hydroxide, water and a compound expressed in the following general formula (I) and/or the following general formula (II):



where EO represents an oxyethylene group, PO represents an oxypropylene group, x and y represent integers satisfying  $x/(x + y) = 0.05$  to 0.4, and z represents a positive integer.



where EO, PO, x, y and z are defined identically to EO, PO, x, y and z in the general formula (I), R represents a residue of alcohol or amine excluding a hydroxyl group or a hydrogen atom of an amino group, and m represents an integer of at least 1.

2. The cleaning agent for a semiconductor device in accordance with claim 1, wherein said hydroxide includes ammonium hydroxide.

3. The cleaning agent for a semiconductor device in accordance with claim 1, wherein said hydroxide is selected from a group consisting of tetramethylammonium hydroxide, a hydroxide of potassium and a hydroxide of sodium.

4. The cleaning agent for a semiconductor device in accordance with claim 1, wherein the concentration of said hydroxide contained in said cleaning agent is 0.01 percent by weight to 31 percent by weight.

5. The cleaning agent for a semiconductor device in accordance with claim 1, wherein the mean molecular weight of the total of said oxypropylene group in said compound expressed in the general formula (I) or (II) is 500 to 5000.

6. The cleaning agent for a semiconductor device in accordance with

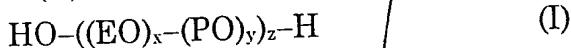
claim 1, wherein the weight ratio of said compound expressed in the general formula (I) and/or the general formula (II) to said hydroxide is (0.3  $\times 10^{-4}$  to 1):1.

7. The cleaning agent for a semiconductor device in accordance with claim 1, wherein the pH of said cleaning agent is at least 8.

8. The cleaning agent for a semiconductor device in accordance with claim 1, further containing not more than 1 percent by weight of hydrogen peroxide.

9. A method of fabricating a semiconductor device, comprising:  
a first step of preparing a semiconductor substrate completely subjected to dry etching; and

10 a second step of cleaning the surface of said semiconductor substrate with a cleaning agent containing a hydroxide, water and a compound expressed in the following general formula (I) and/or the following general formula (II):



15 where EO represents an oxyethylene group, PO represents an oxypropylene group, x and y represent integers satisfying  $x/(x + y) = 0.05$  to 0.4, and z represents a positive integer.



16 where EO, PO, x, y and z are defined identically to EO, PO, x, y and z in the general formula (I), R represents a residue of alcohol or amine excluding a hydroxyl group or a hydrogen atom of an amino group, and m represents an integer of at least 1.

10. The method of fabricating a semiconductor device in accordance with claim 9, wherein said first step includes steps of:

11 performing said dry etching with a resist pattern, and  
removing said resist pattern by ashing.

contact with another element such as the gate electrode 6 or the bit line 9.

As hereinabove described, the conventional cleaning agent and the conventional method of fabricating a semiconductor device have the problems of dissolving tungsten, an alloy such as tungsten nitride or silicon and causing difference between quantities of etching of different types of oxide films, to consequently deteriorate the characteristics of the semiconductor device by disconnecting the wire and the embedded conductive layer and increasing the resistance.

#### SUMMARY OF THE INVENTION

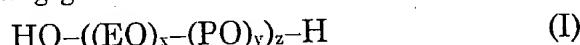
Accordingly, an object of the present invention is to provide a cleaning agent for a semiconductor device, which is so improved as not to disconnect a wire and an embedded conductive layer.

Another object of the present invention is to provide a cleaning agent for a semiconductor device, which is so improved as not to increase the resistance of a wire or an embedded layer.

Still another object of the present invention is to provide a method of fabricating a semiconductor device, which is so improved as not to disconnect a wire or an embedded layer.

A further object of the present invention is to provide a method of fabricating a semiconductor device, which is so improved as not to increase the resistance of a wire or an embedded layer.

A cleaning agent for a semiconductor device according to a first aspect of the present invention contains a hydroxide, water and a compound expressed in the following general formula (I) and/or the following general formula (II):



where EO represents an oxyethylene group, PO represents an oxypropylene group, x and y represent integers satisfying  $x/(x + y) = 0.05$  to 0.4, and z represents a positive integer.



where EO, PO, x, y and z are defined identically to those in the general formula (I), R represents a residue of alcohol or amine excluding a hydroxyl group or a hydrogen atom of an amino group, and m represents an integer.

of at least 1.

The oxyethylene group is expressed as  $-\text{CH}_2-\text{CH}_2-\text{O}-$ , and the oxypropylene group is expressed as  $-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{O}-$  or as  $-\text{CH}_2-\text{CH}(\text{CH}_3)-\text{O}-$ .

5 Dissolubility in preparation of the cleaning agent is insufficient if the value of  $x/(x + y)$  is less than 0.05, while defoamability of the cleaning agent is insufficient if the value is greater than 0.4.

10 The part expressed as  $(\text{EO})_x-(\text{PO})_y)_z$  in each of the general formulas (I) and (II) may be a block copolymer, a random copolymer or a blocky random copolymer, and the block copolymer is preferable among these.

15 Alcohol forming the aforementioned R is prepared from monohydric alcohol such as 2-ethylhexyl alcohol, lauryl alcohol, cetyl alcohol, oleyl alcohol, stearyl alcohol, tridecyl alcohol, tallow alcohol or coconut oil alcohol or polyhydric alcohol such as ethylene glycol, propylene glycol, 1, 3-propanediol, 1,2-butanediol, 1,3-butanediol, 2,3-butanediol, 1,4-butanediol, 2-methyl-1,2-propanediol, 2-methyl-1,3-propanediol, glycerin, trimethylol ethane, trimethylol propane, pentaerythritol or sorbitol, and amine is prepared from methylene diamine or propylene diamine.

20 The cleaning agent according to the first aspect of the present invention hardly dissolves tungsten or an alloy such as tungsten nitride, silicon and an insulator film, and exhibits the same quantity of etching for different types of insulator films. Consequently, the cleaning agent attains such an effect that the width of a gate electrode is not narrowed.

25 Preferably, the aforementioned hydroxide is ammonium hydroxide.

In this case, the amount of impurities contained in a solution is so small that no impurities remain on the surface of a semiconductor substrate since ammonium hydroxide is employed as the hydroxide.

30 Preferably, the aforementioned hydroxide is selected from a group consisting of tetramethylammonium hydroxide, a hydroxide of potassium and a hydroxide of sodium.

The concentration of the hydroxide contained in the aforementioned cleaning agent is preferably 0.01 to 31 percent by weight, and more preferably 0.1 to 3 percent by weight. A sufficient cleaning effect cannot

be attained if the concentration of the hydroxide is excessively low, while the quantity of etching for silicon is increased if the concentration of the hydroxide is excessively high. Therefore, the concentration of the hydroxide is preferably in the range of 0.01 percent by weight to 31 percent by weight.

5 Preferably, the mean molecular weight of the total of the

oxypropylene group in the compound expressed in the general formula (I) and/or (II) is 500 to 5000.

10 The cleaning effect is insufficient if the mean molecular weight is too small, while dissolvability in preparation is insufficient if the mean molecular weight is too large.

15 Preferably, the weight ratio of the compound expressed in the general formula (I) and/or (II) to the hydroxide is  $(0.3 \times 10^{-4}$  to 1):1.

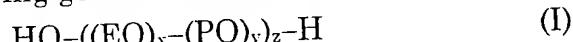
20 The quantity of etching for silicon is increased if the ratio of the copolymer is too small, while defoamability is insufficient if the ratio of the copolymer is too large.

25 Preferably, the pH of the aforementioned cleaning agent is rendered at least 8.

20 Preferably, the cleaning agent further contains not more than 1 percent by weight of hydrogen peroxide.

25 The quantity of etching for tungsten, which is increased if the content of hydrogen peroxide is large, can be reduced to a proper level if the content of hydrogen peroxide is not more than 1 percent by weight, while the quantity of etching for silicon can be further reduced due to mixing with hydrogen peroxide.

30 A method of fabricating a semiconductor device according to a second aspect of the present invention comprises a first step of preparing a semiconductor substrate completely subjected to dry etching and a second step of cleaning the surface of the semiconductor substrate with a cleaning agent containing a hydroxide, water and a compound expressed in the following general formula (I) and/or the following general formula (II):



where EO represents an oxyethylene group, PO represents an oxypropylene

=> file reg  
FILE 'REGISTRY' ENTERED AT 11:46:51 ON 21 NOV 2002  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
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=> d his

FILE 'LCA' ENTERED AT 10:58:50 ON 21 NOV 2002  
L1 10450 SEA (SUBSTRAT? OR SURFACE? OR BASE# OR SUBSTRUCT? OR  
UNDERSTRUCT? OR UNDERLAY? OR FOUNDATION? OR PANE? OR  
DISK? OR DISC# OR WAFER?)/BI,AB

FILE 'REGISTRY' ENTERED AT 11:00:20 ON 21 NOV 2002  
L2 1 SEA SILICON/CN

FILE 'HCA' ENTERED AT 11:04:09 ON 21 NOV 2002  
L3 591667 SEA (L2 OR SILICON OR SI)(2A)L1 OR WAFER? OR SEMICOND?  
OR SEMI(2A)(COND# OR CONDUCT?) OR ((PCB OR DIE OR DIES  
OR CHIP OR CHIPS OR PAD OR PADS OR BUMP#) AND 76/SC,SX)  
OR (PRINT? OR BOARD? OR INTEGRA? OR ELEC# OR ELECTRIC?) (2  
A) CIRCUIT?

L4 235288 SEA (PRINT? OR WIRE# OR WIRING#) (2A)BOARD? OR (WIRE# OR  
WIRING#) (2A) (CIRCUIT? OR HARNESS?) OR IC OR ICS OR I(W)C  
OR TRANSISTOR? OR DIOD? OR RECTIF? OR THYRECT? OR  
THYRIST?  
ACT CLEAN/Q

-----  
L5 QUE (CLEAN? OR LAUND? OR RINS? OR DETERS? OR ABSTERS? OR  
EDULCORAT? OR SANIT? OR HYGIEN? OR DISINFECT? OR  
DECONTAMINA? OR STERILI? OR ABLUT? OR ELUTRIAT? OR  
SCRUB? OR SCOUR? OR DEGREAS? OR LIXIV?)/BI,AB

L6 QUE (MIX? OR BLEND? OR ADMIX? OR COMMIX? OR IMMIX? OR  
INTERMIX? OR DOPE# OR DOPING# OR IMPREGNAT? OR COMPOSIT?  
OR COMPN# OR COMPSN# OR FORMULAT? OR COMBINAT? OR  
INTERSPER? OR AMALGAM?)/BI,AB

L7 QUE CLEANER? OR CLEANSER? OR LAUND? OR DISHWASH? OR (L5  
OR DETERG? OR ABSTERG?) (2A) (L6 OR SOLUTION? OR SOLN# OR  
FLUX? OR LIQ# OR LIQUID# OR TILE# OR TILING# OR HARD? (A) S  
URFACE? OR FLOOR? OR CARPET? OR DISH? OR KITCHEN? OR  
BATH## OR BATHROOM?)

-----  
L8 88657 SEA CLEANER? OR CLEANSER? OR LAUND? OR DISHWASH? OR (L5  
OR DETERG? OR ABSTERG?) (2A) (L6 OR SOLUTION? OR SOLN# OR  
FLUX? OR LIQ# OR LIQUID# OR TILE# OR TILING# OR HARD? (A) S  
URFACE? OR FLOOR? OR CARPET? OR DISH? OR KITCHEN? OR  
BATH## OR BATHROOM?)

FILE 'REGISTRY' ENTERED AT 11:09:33 ON 21 NOV 2002  
E TETRAMETHYLAMMONIUM HYDROXIDE/CN

L9 1 SEA "TETRAMETHYLAMMONIUM HYDROXIDE"/CN  
 E SODIUM HYDROXIDE/CN  
 L10 1 S E3  
 E POTASSIUM HYDROXIDE/CN  
 L11 1 SEA "POTASSIUM HYDROXIDE"/CN

FILE 'HCA' ENTERED AT 11:14:19 ON 21 NOV 2002  
 L12 498986 SEA L9 OR L10 OR L11 OR ME4NOH OR TETRAMETHYLAMMONIUM# (A)  
 (HYDROXIDE# OR OH) OR (TETRAMETHYL OR TETRA(A) (ME OR  
 (METHYL) ) (2A)AMMONIUM# (2A) (HYDROXIDE# OR OH) OR (SODIUM#  
 OR NA OR POTASSIUM# OR K) (W)HYDROXIDE# OR NAOH OR KOH OR  
 LYE# OR POTASH# OR CAUSTIC? OR ENCAUSTIC?

FILE 'REGISTRY' ENTERED AT 11:16:26 ON 21 NOV 2002  
 ACT EOEGPOPG/A

-----  
 L13 ( 9682)SEA 75-21-8/CRN  
 L14 ( 21863)SEA 107-21-1/CRN  
 L15 ( 9283)SEA 75-56-9/CRN  
 L16 ( 8413)SEA 57-55-6/CRN  
 L17 ( 7690)SEA (L13 OR L14) AND (L15 OR L16)  
 L18 11 SEA L17 AND 2/NC

-----  
 E OXIRANE/CN  
 L19 1 SEA OXIRANE/CN  
 D RN  
 L20 21301 SEA 75-21-8/CRN  
 E METHYLOXIRANE/CN  
 L21 1 SEA METHYLOXIRANE/CN  
 D RN  
 L22 17731 SEA 75-56-9/CRN  
 L23 13970 SEA L20 AND L22  
 L24 2073 SEA L23 AND 3/NC  
 L25 1191 SEA L24 AND 3/ELC.SUB  
 L26 485 SEA L24 AND N/ELS AND 4/ELC.SUB

FILE 'HCA' ENTERED AT 11:23:40 ON 21 NOV 2002

L27 14683 SEA L18  
 L28 12626 SEA L25  
 L29 2104 SEA L26  
 L30 1286 SEA L27 AND L8  
 L31 160 SEA L30 AND L12  
 L32 6 SEA L31 AND (L3 OR L4)  
 L33 3 SEA L32 AND (L28 OR L29)  
 L34 1180 SEA L28 AND L8  
 L35 159 SEA L34 AND L12  
 L36 4 SEA L35 AND (L3 OR L4)  
 L37 144 SEA L29 AND L8  
 L38 15 SEA L37 AND L12  
 L39 3 SEA L38 AND (L3 OR L4)  
 L40 8857 SEA L27 AND (L28 OR L29)  
 L41 673 SEA L40 AND L12

L42 16 SEA L41 AND (L3 OR L4)  
 L43 3 SEA L42 AND L8

L44 FILE 'LCA' ENTERED AT 11:31:26 ON 21 NOV 2002  
 1128 SEA (CLEAN? OR LAUND? OR RINS? OR DETERS? OR ABSTERS? OR  
 EDULCORAT? OR SANIT? OR HYGIEN? OR DISINFECT? OR  
 DECONTAMINA? OR STERILI? OR ABLUT? OR ELUTRIAT? OR  
 SCRUB? OR SCOUR? OR DEGREAS? OR LIXIV?) /BI,AB  
 L45 441 SEA (ETCH? OR CHASE# OR CHASING# OR ENCHAS? OR ENGRAV?  
 OR EMBOSS? OR INCIS? OR IMPRINT? OR IMPRESS? OR ENCAUSTIC  
 ?) /BI,AB

FILE 'HCA' ENTERED AT 11:32:09 ON 21 NOV 2002  
 L46 9 SEA L42 AND (L44 OR L45)  
 L47 13 SEA L27 AND L12 AND (L3 OR L4) AND (L44 OR L45)  
 L48 11 SEA L28 AND L12 AND (L3 OR L4) AND (L44 OR L45)  
 L49 4 SEA L29 AND L12 AND (L3 OR L4) AND (L44 OR L45)  
 L50 11 SEA L27 AND HYDROXIDE# AND (L3 OR L4) AND (L44 OR L45)  
 L51 8 SEA L28 AND HYDROXIDE# AND (L3 OR L4) AND (L44 OR L45)  
 L52 5 SEA L29 AND HYDROXIDE# AND (L3 OR L4) AND (L44 OR L45)  
 L53 7 SEA L27 AND HYDROXIDE# AND (L3 OR L4) AND L8  
 L54 5 SEA L28 AND HYDROXIDE# AND (L3 OR L4) AND L8  
 L55 4 SEA L29 AND HYDROXIDE# AND (L3 OR L4) AND L8  
 L56 18 SEA L32 OR L33 OR L36 OR L39 OR L43 OR L46 OR L49 OR L51  
 L57 OR L52 OR L53 OR L54 OR L55  
 9 SEA (L42 OR L47 OR L48 OR L50) NOT L56

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=> file hca  
 FILE 'HCA' ENTERED AT 11:47:04 ON 21 NOV 2002  
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
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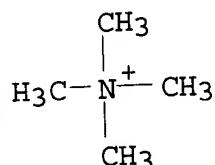
=> d 156 1-18 cbib abs hitstr hitind

L56 ANSWER 1 OF 18 HCA COPYRIGHT 2002 ACS  
 137:95570 Aqueous **cleaning composition** of polymer  
 applying equipment. Sachdev, Harbans S.; Cormack, Richard A.;  
 Capogna, Gerard V.; Mancaruso, Felice J.; Sachdev, Krishna  
 (International Business Machines Corporation, USA). U.S. Pat. Appl.  
 Publ. US 2002094939 A1 20020718, 10 pp. (English). CODEN: USXXCO.  
 APPLICATION: US 2001-765015 20010117. ←  
 AB Water-based alk. **cleaning solns.** useful as an  
 environmentally safer replacement of org. solvents to remove  
 photoresist, polyimide residue and other interlevel dielec. polymer  
 coating residue from polymer film applying equipment, specifically,  
 spin coater bowl and assembly parts consisting of a teflon top  
 shield, stainless steel plate, and a bottom teflon spin coating bowl

used in **semiconductor** device fabrication processes, comprises at least one alkali metal **hydroxide**, at least one alkanolamine, at least one combination of a non-ionic surfactant and an amphoteric surfactant, and at least one salt of a polybasic org. acid, in water.

IT 75-59-2, **Tetramethyl ammonium hydroxide** 1310-58-3, **Potassium hydroxide**, uses 1310-73-2, **Sodium hydroxide**, uses 9008-78-0 37251-69-7 (aq. cleaning compn. of polymer applying equipment)

RN 75-59-2 HCA  
CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



● OH<sup>-</sup>

RN 1310-58-3 HCA  
CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

K- OH

RN 1310-73-2 HCA  
CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na- OH

RN 9008-78-0 HCA  
CN Oxirane, methyl-, polymer with oxirane, mono(octylphenyl) ether (9CI) (CA INDEX NAME)

CM 1

CRN 67554-50-1  
CMF C14 H22 O  
CCI IDS



D1-OH

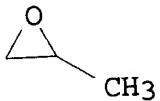
Me-(CH<sub>2</sub>)<sub>7</sub>-D1

CM 2

CRN 9003-11-6  
CMF (C<sub>3</sub> H<sub>6</sub> O) . C<sub>2</sub> H<sub>4</sub> O)x  
CCI PMS

CM 3

CRN 75-56-9  
CMF C<sub>3</sub> H<sub>6</sub> O



CM 4

CRN 75-21-8  
CMF C<sub>2</sub> H<sub>4</sub> O



RN 37251-69-7 HCA  
CN Oxirane, methyl-, polymer with oxirane, mono(nonylphenyl) ether  
(9CI) (CA INDEX NAME)

CM 1

CRN 25154-52-3  
CMF C<sub>15</sub> H<sub>24</sub> O  
CCI IDS



D1-OH

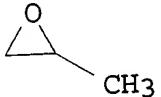
D1-(CH<sub>2</sub>)<sub>8</sub>-Me

CM 2

CRN 9003-11-6  
 CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)x  
 CCI PMS

CM 3

CRN 75-56-9  
 CMF C<sub>3</sub> H<sub>6</sub> O



CM 4

CRN 75-21-8  
 CMF C<sub>2</sub> H<sub>4</sub> O



IC ICM B08B003-00  
 ICS C11D001-00

NCL 510176000

CC 46-6 (Surface Active Agents and Detergents)  
 ST polymer cleaning compn alkali metal

hydroxide alkanolamine

IT Phenols, uses  
 (alkyl, ethoxylated; aq. cleaning compn. of  
 polymer applying equipment)

IT Antireflective films  
 Photoresists  
 Semiconductor devices  
 (aq. cleaning compn. of polymer applying  
 equipment)

IT Polyamic acids  
 Polyimides, uses  
 Silsesquioxanes  
 (aq. cleaning compn. of polymer applying  
 equipment)

IT Electric insulators  
 (coatings; aq. cleaning compn. of polymer  
 applying equipment)

IT Betaines  
 (coco alkylidimethyl, imidopropyl; aq. cleaning  
 compn. of polymer applying equipment)

IT Alcohols, uses  
 (ethoxylated; aq. cleaning compn. of polymer  
 applying equipment)

IT Detergents  
 (liq.; aq. cleaning compn. of  
 polymer applying equipment)

IT Coating process  
 (spin; aq. cleaning compn. of polymer  
 applying equipment)

IT 68-04-2, Sodium citrate 75-59-2, Tetramethyl  
 ammonium hydroxide 77-98-5, Tetraethyl ammonium  
 hydroxide 78-96-6, Isopropanolamine 102-71-6,  
 Triethanolamine, uses 109-83-1, n-Methylethanolamine 111-42-2,  
 Diethanolamine, uses 123-41-1, 2-Hydroxyethyltrimethyl ammonium  
 hydroxide 141-43-5, Ethanolamine, uses 497-19-8, Sodium  
 carbonate, uses 527-07-1, Sodium gluconate 533-96-0, Sodium  
 sesquicarbonate 584-08-7, Potassium carbonate 866-84-2,  
 Potassium citrate 868-18-8, Sodium tartrate 929-06-6, Diethylene  
 glycolamine 1310-58-3, Potassium  
 hydroxide, uses 1310-73-2, Sodium  
 hydroxide, uses 6834-92-0, Sodium metasilicate  
 7758-29-4, Sodium tripolyphosphate 9002-92-0,  
 Poly(oxyethylene)dodecyl ether 9005-67-8,  
 Poly(oxyethylene)sorbitan stearate 9008-78-0 9036-19-5,  
 Poly(oxyethylene)octylphenyl ether 10006-28-7, Potassium  
 metasilicate 25155-30-0, Dodecylbenzene sulfonic acid sodium salt  
 26545-53-9, Dodecylbenzene sulfonic acid diethanolamine salt  
 27323-41-7, Dodecylbenzene sulfonic acid triethanolamine salt  
 37251-69-7 117522-85-7 122258-37-1 153315-81-2,  
 Hydrogen silsesquioxane  
 (aq. cleaning compn. of polymer applying  
 equipment)

Ichiro (Wako Pure Chemical Industries, Ltd., Japan). U.S. US  
6310019 B1 20011030, 12 pp. (English). CODEN: USXXAM.

APPLICATION: US 2000-610657 20000705. 4

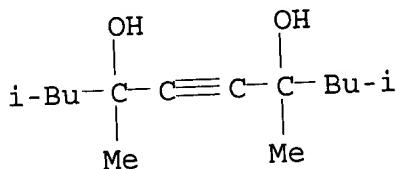
AB A **cleaning** agent for a **semiconductor** substrate  
comprises a polyoxyalkylene alkynediol ether and a quaternary  
ammonium compd. The **cleaning** agents are useful for  
**semi-conductor** substrate, particularly, one having  
copper wirings on its surface. The **cleaning** agent and the  
method have made it possible to control a speed of **etching**  
on silicone oxide so as to remove impurities adsorbed on copper  
wirings and silicone oxide on a surface of a **semi-**  
**conductor** substrate having copper wirings on its surface,  
such as copper oxides and particles, without causing corrosion or  
oxidn. of copper wirings nor causing roughness on the surface.

IT 182211-02-5  
(**cleaning** agents for **semiconductor**  
substrates)

RN 182211-02-5 HCA  
CN Oxirane, methyl-, polymer with oxirane, ether with  
2,4,7,9-tetramethyl-5-decyne-4,7-diol (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 126-86-3  
CMF C14 H26 O2

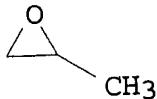


CM 2

CRN 9003-11-6  
CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)<sub>x</sub>  
CCI PMS

CM 3

CRN 75-56-9  
CMF C<sub>3</sub> H<sub>6</sub> O



CM 4

CRN 75-21-8  
CMF C2 H4 O

O

IC ICM C11D001-835  
ICs H01L021-306  
NCL 510175000  
CC 46-6 (Surface Active Agents and Detergents)  
Section cross-reference(s): 76  
ST cleaning agent **semiconductor** substrate  
IT Detergents  
    **Semiconductor** devices  
    (cleaning agents for **semiconductor**  
    substrates)  
IT Quaternary ammonium compounds, uses  
    (cleaning agents for **semiconductor**  
    substrates)  
IT Polyoxyalkylenes, uses  
    (ethers with alkynediols; cleaning agents for  
    **semiconductor** substrates)  
IT 9014-85-1 182211-02-5  
    (cleaning agents for **semiconductor**  
    substrates)  
IT 75-59-2, Tetramethylammonium hydroxide 123-41-1,  
    Trimethyl-2-hydroxyethylammonium hydroxide  
    (cleaning agents for **semiconductor**  
    substrates)

X L56 ANSWER 3 OF 18 HCA COPYRIGHT 2002 ACS  
135:305525 Cleaning solutions for electronic  
components. Takashima, Masayuki (Sumitomo Chemical Co., Ltd.,  
Japan). Jpn. Kokai Tokkyo Koho JP 2001288496 A2 20011016, 6 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-332642 20001031.  
PRIORITY: JP 2000-28129 20000204. ↗

AB Cleaning solns. contain **hydroxides**,  
corrosion inhibitors, and polyethylene propylene glycol or alc. or  
amine derivs. thereof. Thus, a cleaning agent for a  
Si substrate contained 0.3% NH4OH, 50 ppm Adeka TR  
704, and 0.5% cysteine.

IT 52503-47-6, Adeka TR 704  
(Adeka TR 702 and Adeka TR 704; cleaning solns  
contg. **hydroxides** and polyethylene propylene glycol  
for electronic components)

RN 52503-47-6 HCA  
CN Oxirane, methyl-, polymer with oxirane, 1,2-  
ethanediylbis(nitrilodialkylene) ether (9CI) (CA INDEX NAME)

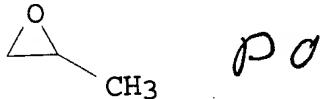
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 9003-11-6  
 (cleaning solns. contg. hydroxides  
 and polyethylene propylene glycol for electronic components)

RN 9003-11-6 HCA  
 CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
 CMF C3 H6 O



CM 2

CRN 75-21-8  
 CMF C2 H4 O



IC ICM C11D001-722  
 ICS C11D003-04; C11D003-20; C11D003-26; C11D003-34; C11D003-36;  
 C11D017-08

CC 46-6 (Surface Active Agents and Detergents)

Section cross-reference(s): 76

ST hydroxide corrosion inhibitor polyoxyethylene oxypropylene  
 cleaning agent; electronic component cleaning  
 agent; silicon substrate cleaning  
 agent

IT Cleaning solvents  
 Corrosion inhibitors  
 Reducing agents

Semiconductor devices

(cleaning solns. contg. hydroxides  
 and polyethylene propylene glycol for electronic components)

IT Aldehydes, uses  
 Carboxylic acids, uses  
 Thiols (organic), uses

(cleaning solns. contg. hydroxides

and polyethylene propylene glycol for electronic components)

IT Hydroxides (inorganic)  
 (cleaning solns. contg. hydroxides  
 and polyethylene propylene glycol for electronic components)

IT Alcohols, uses  
 (mercapto; cleaning solns. contg.

hydroxides and polyethylene propylene glycol for electronic components)

IT 52503-47-6, Adeka TR 704  
(Adeka TR 702 and Adeka TR 704; **cleaning solns** contg. hydroxides and polyethylene propylene glycol for electronic components)

IT 7440-21-3, Silicon, uses  
(**cleaning solns.** contg. hydroxides and polyethylene propylene glycol for electronic components)  
IT 50-81-7, L-Ascorbic acid, uses 52-90-4, Cysteine, uses 95-14-7, 1H-Benzotriazole 96-27-5, Thioglycerol 109-84-2 302-01-2, Hydrazine, uses 7803-49-8, Hydroxyamine, uses  
(**cleaning solns.** contg. hydroxides and polyethylene propylene glycol for electronic components)

IT 7440-33-7, Tungsten, miscellaneous 7440-50-8, Copper, miscellaneous

(**cleaning solns.** contg. hydroxides and polyethylene propylene glycol for electronic components)

IT 1336-21-6, Ammonium hydroxide ((NH<sub>4</sub>)(OH))  
9003-11-6  
(**cleaning solns.** contg. hydroxides and polyethylene propylene glycol for electronic components)

L56 ANSWER 4 OF 18 HCA COPYRIGHT 2002 ACS

X 135:154421 Electronic component **cleaning solutions**.  
Takashima, Masayuki (Sumitomo Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001214199 A2 20010807, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-28128 20000204. ←

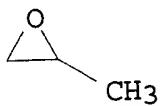
AB The title **solns.**, useful for **cleaning** liq. crystal display or **integrated circuit** devices, comprise (a) hydroxides (e.g., NH<sub>4</sub>OH, Me<sub>4</sub>NOH, KOH, NaOH), (b) water, (c) water-sol. org. compds. (e.g., alcs., ketones, esters, phenols, isopropanol), and (d) ethylene oxide-propylene oxide block copolymer or its monoether (e.g., Adeka L 61, Adeka TR 702).

IT 106392-12-5, Adeka L 61  
(Adeka L 61; electronic component **cleaning** **solns.**)

RN 106392-12-5 HCA  
CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O



CM 2

CRN 75-21-8  
CMF C2 H4 O

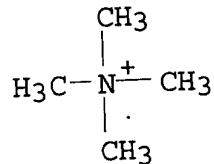
IT 52503-47-6, Adeka TR 702  
(electronic component cleaning solns.)

RN 52503-47-6 HCA  
CN Oxirane, methyl-, polymer with oxirane, 1,2-  
ethanediylbis(nitrilodialkylene) ether (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 75-59-2, Tetramethylammonium hydroxide  
1310-58-3, Potassium hydroxide (KOH), uses 1310-73-2, Sodium  
hydroxide, uses  
(electronic component cleaning solns.)

RN 75-59-2 HCA  
CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)

● OH<sup>-</sup>

RN 1310-58-3 HCA  
CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

K- OH

RN 1310-73-2 HCA  
CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na- OH

IC ICM C11D017-08  
ICS C11D007-06; C11D007-26; C11D007-32; H01L021-304; H05K003-26  
CC 46-6 (Surface Active Agents and Detergents)  
Section cross-reference(s): 76

ST ammonium hydroxide electronic component cleaning  
 soln; polyoxyalkylene electronic component cleaning  
 soln; isopropanol electronic component cleaning  
 soln; ketone electronic component cleaning  
 soln

IT Cleaning solvents  
 Semiconductor devices  
 (electronic component cleaning solns.)

IT Polyoxyalkylenes, uses  
 (electronic component cleaning solns.)

IT Alcohols, uses  
 Esters, uses  
 Hydroxides (inorganic)  
 Ketones, uses  
 Phenols, uses  
 (electronic component cleaning solns.)

IT 106392-12-5, Adeka L 61  
 (Adeka L 61; electronic component cleaning  
 solns.)

IT 52503-47-6, Adeka TR 702  
 (electronic component cleaning solns.)

IT 67-63-0, Isopropanol, uses 75-59-2,  
 Tetramethylammonium hydroxide 1310-58-3,  
 Potassium hydroxide (KOH), uses  
 1310-73-2, Sodium hydroxide, uses  
 1336-21-6, Ammonium hydroxide ((NH4)(OH))  
 (electronic component cleaning solns.)

L56 ANSWER 5 OF 18 HCA COPYRIGHT 2002 ACS  
 135:139055 Electronic component cleaning solutions.  
 Takashima, Masayuki (Sumitomo Chemical Co., Ltd., Japan). Jpn.  
 Kokai Tokkyo Koho JP 2001214200 A2 20010807, 5 pp. (Japanese).  
 CODEN: JKXXAF. APPLICATION: JP 2000-28130 20000204. ←

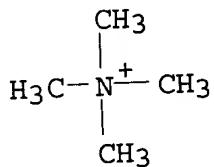
AB The title solns., useful for cleaning  
 liq. crystal display devices, integrated  
 circuit devices, etc., contain hydroxides (e.g.,  
 NH4OH, Me4NOH, KOH, NaOH), water,  
 metal corrosion inhibitors (e.g., Adeka TR 702), and water-sol. org.  
 compds. (e.g., alcs., ketones, esters, phenols).

IT 52503-47-6, Adeka TR 702  
 (Adeka TR 702, metal corrosion inhibitors; electronic component  
 cleaning solns.)

RN 52503-47-6 HCA  
 CN Oxirane, methyl-, polymer with oxirane, 1,2-  
 ethanediylbis(nitrilodialkylene) ether (9CI) (CA INDEX NAME)  
 \*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
 IT 75-59-2, Tetramethylammonium hydroxide  
 1310-58-3, Potassium hydroxide (KOH), uses 1310-73-2, Sodium  
 hydroxide, uses  
 (electronic component cleaning solns.)

RN 75-59-2 HCA

CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



● OH<sup>-</sup>

RN 1310-58-3 HCA  
 CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

K-OH

RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na-OH

IC ICM C11D017-08  
 ICS C11D007-06; C11D007-22; C11D007-26; C11D007-32; C11D007-34;  
 C11D007-44

CC 46-6 (Surface Active Agents and Detergents)  
 ST hydroxide electronic component cleaning  
 soln; metal corrosion inhibitor cleaning  
 soln; org compd electronic component cleaning  
 soln

IT Cleaning solvents  
 Corrosion inhibitors  
 Semiconductor devices  
 (electronic component cleaning solns.)

IT Alcohols, uses  
 Esters, uses  
 Hydroxides (inorganic)  
 Ketones, uses  
 Phenols, uses  
 (electronic component cleaning solns.)

IT 52503-47-6, Adeka TR 702  
 (Adeka TR 702, metal corrosion inhibitors; electronic component  
 cleaning solns.)

IT 52-90-4, Cysteine, uses 67-63-0, Isopropanol, uses 75-59-2  
 , Tetramethylammonium hydroxide 96-27-5,  
 Thioglycerol 1310-58-3, Potassium  
 hydroxide (KOH), uses 1310-73-2,  
 Sodium hydroxide, uses 1336-21-6, Ammonium

**hydroxide ((NH4)(OH))**  
 (electronic component cleaning solns.)

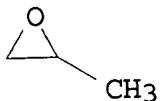
L56 ANSWER 6 OF 18 HCA COPYRIGHT 2002 ACS **Applicant**  
 134:312848 Cleaning agent for **semiconductor** device  
 and manufacture of **semiconductor** device therewith. Kanno,  
 Itaru; Yokoi, Naoki; Morita, Hiroyuki; Ichiki, Naoki; Nezu, Hideaki;  
 Takashima, Masayuki (Mitsubishi Electric Corp., Japan; Sumitomo  
 Chemical Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 2001107081 A2  
 20010417, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
 1999-285515 19991006.

AB The **cleaning** agent esp. for **semiconductor** device  
 after dry **etching** comprises **hydroxides**, water,  
 and ethylene oxide-propylene oxide copolymer or alkyl ethers or  
 amine derivs. An aq. soln. contained 0.3% NH4OH and 2.5 ppm Adeka  
 L31.

IT 9003-11-6, Ethylene oxide-propylene oxide copolymer  
 (Adeka L 31; **cleaning** agent for **semiconductor**  
 device and manuf. of **semiconductor** device therewith)

RN 9003-11-6 HCA  
 CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
 CMF C3 H6 O

CM 2

CRN 75-21-8  
 CMF C2 H4 O

IT 52503-47-6, Ethylene oxide-propylene oxide copolymer ether  
 with ethylenediamine  
 (Adeka TR 702; **cleaning** agent for **semiconductor**  
 device and manuf. of **semiconductor** device therewith)

RN 52503-47-6 HCA  
 CN Oxirane, methyl-, polymer with oxirane, 1,2-  
 ethanediylbis(nitrilodialkylene) ether (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

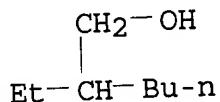
IT 64366-70-7, NFB 2040

(NFB 2040; cleaning agent for **semiconductor**  
device and manuf. of **semiconductor** device therewith)

RN 64366-70-7 HCA  
CN Oxirane, methyl-, polymer with oxirane, mono(2-ethylhexyl) ether  
(9CI) (CA INDEX NAME)

CM 1

CRN 104-76-7  
CMF C8 H18 O

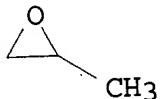


CM 2

CRN 9003-11-6  
CMF (C3 H6 O . C2 H4 O)x  
CCI PMS

CM 3

CRN 75-56-9  
CMF C3 H6 O



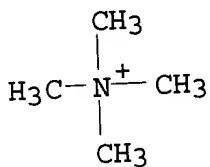
CM 4

CRN 75-21-8  
CMF C2 H4 O



IT 75-59-2, Tetramethylammonium hydroxide  
1310-58-3, Potassium hydroxide, uses  
1310-73-2, Sodium hydroxide, uses  
(cleaning agent for **semiconductor** device and  
manuf. of **semiconductor** device therewith)

RN 75-59-2 HCA  
CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



● OH<sup>-</sup>

RN 1310-58-3 HCA  
 CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

K- OH

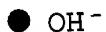
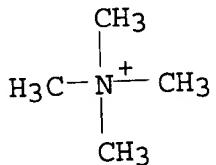
RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na- OH

IC ICM C11D001-722  
 ICS C11D003-04; H01L021-3065; H01L021-304  
 CC 46-6 (Surface Active Agents and Detergents)  
 Section cross-reference(s): 76  
 ST cleaning agent **semiconductor** device  
 hydroxide; ammonium hydroxide  
**semiconductor** device cleaning; ethoxylated  
 propoxylated copolymer cleaning agent  
**semiconductor**  
 IT Detergents  
 Semiconductor device fabrication  
 (cleaning agent for **semiconductor** device and  
 manuf. of **semiconductor** device therewith)  
 IT Polyoxyalkylenes, uses  
 (cleaning agent for **semiconductor** device and  
 manuf. of **semiconductor** device therewith)  
 IT Polyoxyalkylenes, uses  
 (ethers; **cleaning** agent for **semiconductor**  
 device and manuf. of **semiconductor** device therewith)  
 IT 9003-11-6, Ethylene oxide-propylene oxide copolymer  
 (Adeka L 31; **cleaning** agent for **semiconductor**  
 device and manuf. of **semiconductor** device therewith)  
 IT 52503-47-6, Ethylene oxide-propylene oxide copolymer ether  
 with ethylenediamine  
 (Adeka TR 702; **cleaning** agent for **semiconductor**  
 device and manuf. of **semiconductor** device therewith)  
 IT 64366-70-7, NFB 2040  
 (NFB 2040; **cleaning** agent for **semiconductor**

device and manuf. of **semiconductor** device therewith)  
 IT 75-59-2, **Tetramethylammonium hydroxide**  
 1310-58-3, **Potassium hydroxide**, uses  
 1310-73-2, **Sodium hydroxide**, uses  
 1336-21-6, **Ammonium hydroxide**  
 (cleaning agent for **semiconductor** device and  
 manuf. of **semiconductor** device therewith)

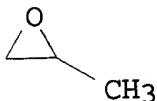
→ L56 ANSWER 7 OF 18 HCA COPYRIGHT 2002 ACS  
 134:6164 Precise **cleaning** agents for glass and **wafers**  
 . Cho, Shunren; Kubokawa, Kazuo (Tama Chemical Co., Ltd., Japan).  
 Jpn. Kokai Tokkyo Koho JP 2000319699 A2 20001121, 9 pp. (Japanese).  
 CODEN: JKXXAF. APPLICATION: JP 1999-127104 19990507. ←  
 AB Cleaning agents contain quaternary ammonium carbonates and  
 hydroxides and org. acids for pH regulators, and optionally  
 anionic and nonionic surfactants and chelating agents. Thus, a  
 cleaning agent for lens glass contained tetramethylammonium  
 carbonate 0.1, **tetramethylammonium hydroxide**  
 0.05, polyethylene propylene glycol 0.05, citric acid 0.1, and EDTA  
 0.01%.  
 IT 75-59-2, **Tetramethylammonium hydroxide**  
 9003-11-6  
 (cleaning agents for glass and **wafers** contg.  
 quaternary ammonium carbonate and **hydroxides** and pH  
 regulators and surfactants and chelating agents)  
 RN 75-59-2 HCA  
 CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



RN 9003-11-6 HCA  
 CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
 CMF C<sub>3</sub> H<sub>6</sub> O



CM 2

CRN 75-21-8  
CMF C<sub>2</sub> H<sub>4</sub> O

IT 7440-21-3, Silicon, uses  
(substrates; **cleaning** agents for glass and  
wafers contg. quaternary ammonium carbonate and  
**hydroxides** and pH regulators and surfactants and  
chelating agents)

RN 7440-21-3 HCA  
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

IC ICM C11D017-08  
ICS B08B003-08; C11D003-26; C11D007-32; H01L021-304

CC 46-6 (Surface Active Agents and Detergents)  
Section cross-reference(s): 57, 73, 76

ST glass **wafer** **cleaning** agent quaternary ammonium  
carbonate **hydroxide**; pH regulator **cleaning** agent  
quaternary ammonium compd

IT Surfactants  
(anionic; **cleaning** agents for glass and **wafers**  
contg. quaternary ammonium carbonate and **hydroxides** and  
pH regulators and surfactants and chelating agents)

IT Aluminoborosilicate glasses  
(barium aluminoborosilicate, Corning 7059; **cleaning**  
agents for glass and **wafers** contg. quaternary ammonium  
carbonate and **hydroxides** and pH regulators and  
surfactants and chelating agents)

IT Borosilicate glasses  
(barium borosilicate, SK 16; **cleaning** agents for glass  
and **wafers** contg. quaternary ammonium carbonate and  
**hydroxides** and pH regulators and surfactants and  
chelating agents)

IT Chelating agents  
Detergents  
Lenses

pH

(cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT Glass, uses

Optical glass

Quaternary ammonium compounds, uses

(cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT Borosilicate glasses

(crown, BK 7; cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT Borate glasses

(lanthanum flint, LaF 3; cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT Surfactants

(nonionic; cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT Acids, uses

(org., pH regulators; cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT Metals, uses

(substrates; cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT Semiconductor devices

(wafers; cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT 60-00-4, EDTA, uses

(chelating agents; cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT 67-43-6, Diethylenetriamine pentaacetic acid

(cleaning agents for glass and wafers contg. quaternary ammonium carbonate and hydroxides and pH regulators and surfactants and chelating agents)

IT 75-59-2, Tetramethylammonium hydroxide

1303-86-2, Boron oxide, 1305-78-8, Calcium oxide, uses 1304-28-5, Barium oxide, uses 1313-59-3, Sodium oxide, uses 1312-81-8, Lanthanum oxide

1317-36-8, Lead oxide (PbO), uses 9003-11-6 9016-45-9,  
 Polyethylene glycol nonylphenyl ether 40105-52-0,  
 Tetramethylammonium carbonate

(cleaning agents for glass and wafers contg.

quaternary ammonium carbonate and hydroxides and pH  
 regulators and surfactants and chelating agents)

IT 50-21-5, Lactic acid, uses 77-92-9, Citric acid, uses 144-62-7,  
 Oxalic acid, uses 526-95-4, Gluconic acid  
 (pH regulators; cleaning agents for glass and  
 wafers contg. quaternary ammonium carbonate and  
 hydroxides and pH regulators and surfactants and  
 chelating agents)

IT 7429-90-5, Aluminum, uses 7440-21-3, Silicon,  
 uses 7440-33-7, Tungsten, uses 7440-50-8, Copper, uses  
 7631-86-9, Silica, uses  
 (substrates; cleaning agents for glass and  
 wafers contg. quaternary ammonium carbonate and  
 hydroxides and pH regulators and surfactants and  
 chelating agents)

L56 ANSWER 8 OF 18 HCA COPYRIGHT 2002 ACS  
 133:106635 Cleaning compositions for electronic  
 parts. Ichiki, Naoki; Nezu, Hideaki (Sumitomo Chemical Co., Ltd.,  
 Japan). Jpn. Kokai Tokkyo Koho JP 2000200766 A2 20000718, 4 pp.  
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-276370 19990929.

PRIORITY: JP 1998-311940 19981102. ←

AB The compns. comprise (A) NH<sub>4</sub>OH, KOH or NaOH, (B)  
 polyethers contg. a repeating unit of oxyethylene and/or  
 oxypropylene, and (C) H<sub>2</sub>O. Thus, a cleaning compn  
 comprising a 1% aq. NH<sub>4</sub>OH soln. and 10 ppm propylene  
 oxide-ethylene oxide copolymer (Adeka Pluronic L 31) showed good  
 corrosion prevention to a Si substrate.

IT 1310-58-3, Potassium hydroxide, uses  
 1310-73-2, Sodium hydroxide, uses  
 106392-12-5, Pluronic L 31  
 (cleaning compns. for electronic parts)

RN 1310-58-3 HCA  
 CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

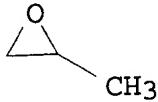
K-OH

RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na-OH

RN 106392-12-5 HCA  
 CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CRN 75-56-9  
CMF C3 H6 O



CM 2

CRN 75-21-8  
CMF C2 H4 O



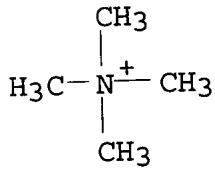
IC ICM H01L021-304  
ICS C11D007-06; C11D007-26; C11D007-50; C11D001-722  
CC 46-6 (Surface Active Agents and Detergents)  
Section cross-reference(s): 76  
ST polyoxyethylene polyoxypropylene ammonium hydroxide  
detergent silicon; elec part cleaning potassium  
hydroxide polyoxyalkylene  
IT Polyoxyalkylenes, uses  
(block; cleaning compns. for electronic  
parts)  
IT Detergents  
Electric apparatus  
(cleaning compns. for electronic parts)  
IT 1310-58-3, Potassium hydroxide, uses  
1310-73-2, Sodium hydroxide, uses  
1336-21-6, Ammonium hydroxide 106392-12-5,  
Pluronic L 31  
(cleaning compns. for electronic parts)

L56 ANSWER 9 OF 18 HCA COPYRIGHT 2002 ACS  
130:339751 Low-foaming detergent compositions and  
method for cleaning of semiconductor substrates  
or elements using them. Kitasawa, Kozo; Horio, Yasunori (Kao Corp.,  
Japan). Jpn. Kokai Tokkyo Koho JP 11121418 A2 19990430 Heisei, 15  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-280317  
19971014.  
AB The compns. contain p-R1C6H4(CH2)nO(AO)mX (I; R1 = H, C1-5 alkyl,  
C2-5 alkenyl; AO = C2H4O, C3H6O; X = H, C1-4 alkyl, C1-4 acyl; n =  
0-2; m = 1-8) and/or R2O(AO)mX (R2 = C1-6 alkyl, C2-6 alkenyl, C1-6  
acyl; AO, X, m = same as I). Thus, a Si wafer  
was treated with an aq. dispersion contg. SiO2 particles and Bu  
laurate and soaked into a detergent soln. contg.

NH<sub>3</sub>, H<sub>2</sub>O<sub>2</sub>, and 5.0% BuO(C<sub>2</sub>H<sub>4</sub>O)<sub>2</sub>H under ultrasonic irradn. to result in 93% removal of SiO<sub>2</sub> particles and 100% removal of Bu laurate.

IT 75-59-2, **Tetramethylammonium hydroxide**  
 1310-58-3, **Potassium hydroxide, uses**  
 37311-00-5, Ethylene oxide-propylene oxide copolymer monododecyl ether 52232-09-4, Ethylene oxide-propylene oxide copolymer monohexyl ether (low-foaming detergents contg. polyoxyalkylene monoethers for **semiconductor substrates or elements**)

RN 75-59-2 HCA  
 CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



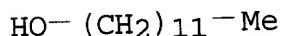
RN 1310-58-3 HCA  
 CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)



RN 37311-00-5 HCA  
 CN Oxirane, methyl-, polymer with oxirane, monododecyl ether (9CI) (CA INDEX NAME)

CM 1

CRN 112-53-8  
 CMF C12 H26 O



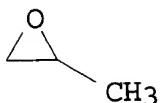
CM 2

CRN 9003-11-6  
 CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)<sub>x</sub>  
 CCI PMS

CM 3

CRN 75-56-9

CMF C3 H6 O



CM 4

CRN 75-21-8  
CMF C2 H4 ORN 52232-09-4 HCA  
CN Oxirane, methyl-, polymer with oxirane, monohexyl ether (9CI) (CA  
INDEX NAME)

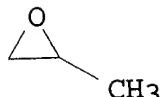
CM 1

CRN 111-27-3  
CMF C6 H14 OHO-(CH<sub>2</sub>)<sub>5</sub>-Me

CM 2

CRN 9003-11-6  
CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)x  
CCI PMS

CM 3

CRN 75-56-9  
CMF C<sub>3</sub> H<sub>6</sub> O

CM 4

CRN 75-21-8

CMF C2 H4 O



IC ICM H01L021-304  
 ICS C11D001-72; C11D001-722; C11D003-20; H05K003-26  
 CC 46-6 (Surface Active Agents and Detergents)  
 ST Section cross-reference(s): 76  
 detergent low foaming polyoxyalkylene ether **semiconductor**;  
 polyethylene glycol monobutyl ether detergent **semiconductor**  
 IT Alcohols, uses  
 (amino; low-foaming detergents contg. polyoxyalkylene monoethers  
 for **semiconductor** substrates or elements)  
 IT Polyoxyalkylenes, uses  
 (ethers; low-foaming detergents contg. polyoxyalkylene monoethers  
 for **semiconductor** substrates or elements)  
 IT Detergents  
**Semiconductor** devices  
 (low-foaming detergents contg. polyoxyalkylene monoethers for  
**semiconductor** substrates or elements)  
 IT Acids, uses  
 Bases, uses  
 (low-foaming detergents contg. polyoxyalkylene monoethers for  
**semiconductor** substrates or elements)  
 IT 62-49-7, Choline 64-18-6, Formic acid, uses 64-19-7, Acetic  
 acid, uses 75-59-2, **Tetramethylammonium**  
**hydroxide** 1310-58-3, **Potassium**  
**hydroxide**, uses 7647-01-0, Hydrochloric acid, uses  
 7664-39-3, Hydrofluoric acid, uses 7664-41-7, Ammonia, uses  
 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses  
 7722-84-1, Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), uses 9002-92-0 9004-77-7,  
 Polyethylene glycol monobutyl ether 9004-78-8, Polyethylene glycol  
 monophenyl ether 26403-74-7, Polyethylene glycol monobenzyl ether  
 27252-75-1, Polyethylene glycol mono(p-butylphenyl) ether 37311-00-5,  
 Polyethylene oxide-propylene oxide copolymer monododecyl ether  
 52232-09-4, Ethylene oxide-propylene oxide copolymer  
 monohexyl ether 80730-57-0, Polyethylene glycol butyl methyl ether  
 127695-32-3, Polyethylene glycol dodecyl ethyl ether 132775-10-1,  
 Polyethylene glycol benzyl methyl ether 224161-68-6, Polyethylene  
 glycol propyl ether acetate 224161-69-7, Polyethylene glycol  
 mono(heptadec-8-enyl) ether  
 (low-foaming detergents contg. polyoxyalkylene monoethers for  
**semiconductor** substrates or elements)

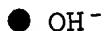
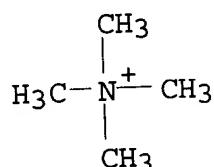
L56 ANSWER 10 OF 18 HCA COPYRIGHT 2002 ACS

130:319560 Compositions and method for **cleaning** of  
**semiconductor** substrates or elements. Kitazawa, Kozo;  
 Horio, Yasunori (Kao Corp., Japan). Jpn. Kokai Tokkyo Koho JP  
 11116984 A2 19990427 Heisei, 17 pp. (Japanese). CODEN: JKXXAF.

AB APPLICATION: JP 1997-288553 19971021.  
 Title compns. showing low foaming properties, contain compds. with  
 .gtoreq.2 phosphonic acid groups, and optionally  
 $p\text{-R}_1\text{C}_6\text{H}_4(\text{CH}_2)\text{NO}(\text{AO})\text{mX}$  ( $\text{R}_1 = \text{H}$ , C1-5 alkyl, C2-5 alkenyl;  $\text{AO} =$   
 ethylene oxide, propylene oxide;  $\text{X} = \text{H}$ , C1-4 alkyl or acyl;  $\text{n} = 0-2$ ;  
 $\text{m} = 1-8$ ) and/or  $\text{R}_2\text{O}(\text{AO})\text{mX}$  ( $\text{R}_2 = \text{C1-6 alkyl, C2-6 alkenyl, C1-6 acyl}$ ;  
 $\text{AO} = \text{same as above; X} = \text{H, C1-4 alkyl or acyl; m} = 1-8$ ). The  
 compns. may further contain nonionic surfactants and pH controlling  
 agents. Thus, aq. soln. (pH 7.5) of 0.1% ammonium  
 1-hydroxyethylidene-1,1-diphosphonate effectively removed fine  
 particles and oily soil from  $\text{SiO}_2$  particles.

IT 75-59-2, **Tetramethylammonium hydroxide**  
 1310-58-3, **Potassium hydroxide**, uses  
 (pH controlling agent; compns. contg. phosphonate group-contg.  
 compds. for **cleaning of semiconductor**  
 substrates or elements)

RN 75-59-2 HCA (CA INDEX NAME)  
 CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



RN 1310-58-3 HCA (CA INDEX NAME)  
 CN Potassium hydroxide ( $\text{K}(\text{OH})$ ) (9CI) (CA INDEX NAME)

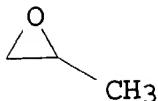


IT 9003-11-6, Ethylene oxide-propylene oxide copolymer  
 37311-00-5, Ethylene oxide-propylene oxide copolymer  
 monododecyl ether 52232-09-4  
 (surfactants; compns. contg. phosphonate group-contg. compds. for  
**cleaning of semiconductor** substrates or  
 elements)

RN 9003-11-6 HCA (CA INDEX NAME)  
 CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
 CMF C3 H6 O



CM 2

CRN 75-21-8  
CMF C2 H4 ORN 37311-00-5 HCA  
CN Oxirane, methyl-, polymer with oxirane, monododecyl ether (9CI) (CA  
INDEX NAME)

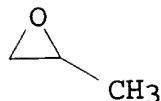
CM 1

CRN 112-53-8  
CMF C12 H26 OHO—(CH<sub>2</sub>)<sub>11</sub>—Me

CM 2

CRN 9003-11-6  
CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)x  
CCI PMS

CM 3

CRN 75-56-9  
CMF C<sub>3</sub> H<sub>6</sub> O

CM 4

CRN 75-21-8  
CMF C<sub>2</sub> H<sub>4</sub> O



RN 52232-09-4 HCA  
 CN Oxirane, methyl-, polymer with oxirane, monohexyl ether (9CI) (CA  
 INDEX NAME)

CM 1

CRN 111-27-3  
 CMF C6 H14 O

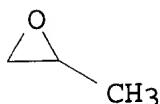
HO—(CH<sub>2</sub>)<sub>5</sub>—Me

CM 2

CRN 9003-11-6  
 CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)x  
 CCI PMS

CM 3

CRN 75-56-9  
 CMF C<sub>3</sub> H<sub>6</sub> O



CM 4

CRN 75-21-8  
 CMF C<sub>2</sub> H<sub>4</sub> O



IC ICM C11D001-12  
 ICS C11D010-02; H01L021-304; C11D001-12; C11D001-66; C11D007-26  
 CC 76-3 (Electric Phenomena)  
 Section cross-reference(s): 46  
 ST ammonium hydroxyethylidenediphosphonate **semiconductor**  
 device **cleaning**; phosphonate **semiconductor**  
 device **cleaning**; nonionic surfactant polyoxyalkylene ether

IT **semiconductor cleaning**  
 Alcohols, uses  
 (amino, pH controlling agent; compns. contg. phosphonate group-contg. compds. for **cleaning of semiconductor substrates or elements**)

IT **Cleaning**  
 Detergents  
 Semiconductor devices  
 (compns. contg. phosphonate group-contg. compds. for **cleaning of semiconductor substrates or elements**)

IT Polyoxyalkylenes, uses  
 (ethers, surfactants; compns. contg. phosphonate group-contg. compds. for **cleaning of semiconductor substrates or elements**)

IT Surfactants  
 (nonionic; compns. contg. phosphonate group-contg. compds. for **cleaning of semiconductor substrates or elements**)

IT 34274-29-8, Ammonium 1-hydroxyethylidene-1,1-diphosphonate  
 73105-66-5, Diammonium ethyl phosphite 93919-70-1 223646-36-4  
 (compns. contg. phosphonate group-contg. compds. for **cleaning of semiconductor substrates or elements**)

IT 62-49-7, Choline 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 75-59-2, **Tetramethylammonium hydroxide** 1310-58-3, **Potassium hydroxide**, uses 7647-01-0, Hydrochloric acid, uses 7664-39-3, Hydrofluoric acid, uses 7664-41-7, Ammonia, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses (pH controlling agent; compns. contg. phosphonate group-contg. compds. for **cleaning of semiconductor substrates or elements**)

IT 112-34-5, Diethylene glycol monobutyl ether 2050-25-1, Diethylene glycol monobenzyl ether 7204-16-2, Triethylene glycol monophenyl ether 9002-92-0 9003-11-6, Ethylene oxide-propylene oxide copolymer 9004-98-2 26027-38-3, Polyethylene glycol p-nonylphenyl ether 27252-75-1, Polyethylene glycol monoocetyl ether 28407-93-4 28761-52-6, Polyethylene glycol mono(p-butylphenyl) ether 31017-83-1 37311-00-5, Ethylene oxide-propylene oxide copolymer monododecyl ether 52232-09-4 132775-10-1 220997-72-8  
 (surfactants; compns. contg. phosphonate group-contg. compds. for **cleaning of semiconductor substrates or elements**)

L56 ANSWER 11 OF 18 HCA COPYRIGHT 2002 ACS  
 129:324973 Washing for removal of screen printing paste by  
 environment-friendly aqueous solutions in manufacture of ceramic  
 electric circuit board. Sashudev,  
 Krishna G.; Knickerbocker, John U.; Pomerantz, Glenn A.; Tripp,  
 Bruce E. (International Business Machines Corp., USA). Jpn. Kokai

Tokkyo Koho JP 10264362 A2 19981006 Heisei, 12 pp. (Japanese).  
 CODEN: JKXXAF. APPLICATION: JP 1998-40894 19980224. PRIORITY: US  
 1997-808926 19970228. ←

AB Residue of screen-printing pastes (for making an elec. circuit on a ceramic substrate) left on parts in a screen-printing app. (esp. a metal mask) are removed by washing with .gtoreq.1 aq. alkali detergent solns. (instead of conventional C2Cl6).

IT 1310-58-3, Potassium hydroxide, uses  
 1310-73-2, Sodium hydroxide, uses  
 (aq.; removal of screen printing paste from printing app. by washing with aq. alkali soln.)

RN 1310-58-3 HCA  
 CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

K-OH

RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na-OH

IT 9082-01-3  
 (surfactant in paste; removal of screen printing paste from printing app. by washing with aq. alkali soln.)

RN 9082-01-3 HCA  
 CN Oxirane, methyl-, polymer with oxirane, nonylphenyl ether (9CI) (CA INDEX NAME)

CM 1

CRN 25154-52-3  
 CMF C15 H24 O  
 CCI IDS



D1-OH

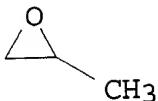
D1-(CH<sub>2</sub>)<sub>8</sub>-Me

CM 2

CRN 9003-11-6  
 CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)x  
 CCI PMS

CM 3

CRN 75-56-9  
 CMF C<sub>3</sub> H<sub>6</sub> O



CM 4

CRN 75-21-8  
 CMF C<sub>2</sub> H<sub>4</sub> O



IC ICM B41F035-00  
 ICS H05K003-12; C11D007-06  
 CC 76-14 (Electric Phenomena)  
 Section cross-reference(s): 74  
 ST screen printing paste removal aq soln; alkali aq soln washing  
 printing app; ceramic **elec circuit board**  
 screen printing  
 IT Alkali metal **hydroxides**  
 Alkali metal salts  
 (aq.; removal of screen printing paste from printing app. by  
 washing with aq. alkali soln.)  
 IT **Printed circuit boards**  
 (ceramic; removal of screen printing paste from printing app. by  
 washing with aq. alkali soln.)  
 IT 102-71-6, Triethanolamine, uses 111-42-2, Diethanolamine, uses  
 141-43-5, Monoethanolamine, uses 497-19-8, Sodium carbonate, uses  
 533-96-0, Sodium sesquicarbonate 584-08-7, Potassium carbonate  
 1310-58-3, Potassium **hydroxide**, uses  
 1310-73-2, Sodium **hydroxide**, uses  
 6834-92-0, Sodium metasilicate 10006-28-7, Potassium metasilicate  
 (aq.; removal of screen printing paste from printing app. by  
 washing with aq. alkali soln.)  
 IT 60-00-4D, EDTA, allylmetal salt, complex 9002-92-0,  
 Polyoxyethylene dodecyl ether 9063-46-1 **9082-01-3**  
 19402-64-3D, Ammonium benzenesulfonate, alkyl derivs. 25155-30-0,

Sodium dodecylbenzenesulfonate 26545-53-9, Diethanolamine  
 dodecylbenzenesulfonate 27323-41-7  
 (surfactant in paste; removal of screen printing paste from  
 printing app. by washing with aq. alkali soln.)

L56 ANSWER 12 OF 18 HCA COPYRIGHT 2002 ACS

129:277711 Aqueous alkali **cleaning compositions**.  
 Cala, Francis R.; Reynolds, Richard A. (Church and Dwight Co., Inc.,  
 USA). U.S. US 5814588 A 19980929, 14 pp. (English). CODEN:  
 USXXAM. APPLICATION: US 1996-617606 19960319. ←

AB Aq. alkali **cleaning compns.** contain an alkali  
 metal salt, an N-alkyl pyrrolidone deriv., and specific ethylene  
 oxide/propylene oxide block copolymers having mol. wt. 1500-2500.  
 Such compns. can be employed as an aq. conc. or **soln.** to  
 clean a substrate such as a **circuit board**  
 , **wiring board** or metal surface. Specific  
 ethylene oxide/propylene oxide block copolymers protect plastic  
 parts from corrosion by N-alkyl pyrrolidone derivs. without  
 compromising N-alkyl pyrrolidone deriv. **cleaning ability**.

IT 1310-73-2, Sodium **Hydroxide**, uses  
 106392-12-5, Pluronic L31 107397-59-1, Tetronic  
 150R1  
 (aq. alkali **cleaning compns.**)

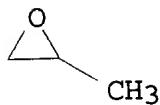
RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na—OH

RN 106392-12-5 HCA  
 CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
 CMF C3 H6 O



CM 2

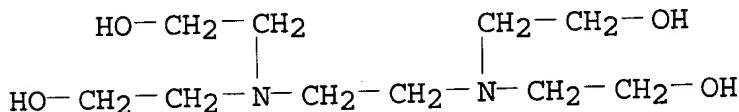
CRN 75-21-8  
 CMF C2 H4 O



RN 107397-59-1 HCA  
 CN Oxirane, methyl-, polymer with oxirane, ether with  
 2,2',2'',2'''-(1,2-ethanediylidinitrilo)tetrakis[ethanol] (4:1),  
 block (9CI) (CA INDEX NAME)

CM 1

CRN 140-07-8  
 CMF C10 H24 N2 O4

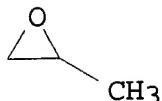


CM 2

CRN 106392-12-5  
 CMF (C3 H6 O . C2 H4 O)x  
 CCI PMS

CM 3

CRN 75-56-9  
 CMF C3 H6 O



CM 4

CRN 75-21-8  
 CMF C2 H4 O



IC ICM C11D001-722  
 ICS C11D003-10; C11D003-37; C11D003-28  
 NCL 510175000  
 CC 46-6 (Surface Active Agents and Detergents)  
 ST aq alkali **cleaning compn**; alkyl pyrrolidone  
**cleaning compn**; ethylene propylene oxide block  
 copolymer detergent

IT Alcohols, uses  
 (C12-15, ethoxylated, ethoxylated propoxylated; aq. alkali  
**cleaning compns.**)

IT Alcohols, uses  
 (alkoxy, C12-15, ethoxylated propoxylated; aq. alkali  
**cleaning compns.**)

IT Detergents  
 (aq. alkali **cleaning compns.**)

IT 9002-86-2D, Polyvinyl chloride, chlorinated  
 (aq. alkali **cleaning compns.**)

IT 497-19-8, Sodium Carbonate, uses 584-08-7, Potassium Carbonate  
 616-45-5D, Pyrrolidone, N-alkyl derivs. 1310-73-2,  
**Sodium Hydroxide**, uses 1312-76-1, Kasil #1  
 2687-94-7, Surfadone LP100 2687-96-9, 1-Dodecyl-2-pyrrolidone  
 55257-88-0, 1-Decyl-2-pyrrolidone 56590-81-9, Plurafac RA40  
 59005-06-0 84501-72-4, Monatrophe 1250 104492-20-8, Industrol-DW5  
**106392-12-5**, Pluronic L31 **107397-59-1**, Tetronic  
 150R1 133687-11-3, Polytergent CS-1 162430-60-6, Polytergent  
 SL42 184378-39-0, Carbopol 625  
 (aq. alkali **cleaning compns.**)

L56 ANSWER 13 OF 18 HCA COPYRIGHT 2002 ACS

121:48465 Stabilization of silicate **solutions** used to  
 clean electronic circuits. Winston, Anthony E.; Dunn,  
 Steven E.; Cala, Francis R.; Vinci, Alfredo; LaJoie, M. Stephen  
 (Church and Dwight Co., Inc., USA). U.S. US 5234505 A 19930810, 20  
 pp. Cont-in-part of U.S. Ser. No. 731,512, abandoned. (English).  
 CODEN: USXXAM. APPLICATION: US 1992-896381 19920610. PRIORITY: US  
 1991-731512 19910717.

AB Aq. **cleaning compns.** such as for household use  
 or for cleaning electronic circuit assemblies comprise an alk. salt,  
 an alkali metal silicate to boost deterutive action or to provide  
 corrosion protection to the substrates which are cleaned, and an  
 anionic polymer which stabilizes the alkali metal silicate to  
 prevent pptn. of the silicate from soln.

IT 1310-58-3, Potassium hydroxide, uses  
 1310-73-2, Sodium hydroxide, uses  
 106392-12-5, Pluronic 17R4  
 (**cleaning solns.** contg., for electronic  
 circuit assemblies, silicate stabilization in)

RN 1310-58-3 HCA  
 CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

K—OH

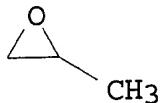
RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na—OH

RN 106392-12-5 HCA  
 CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
 CMF C3 H6 O



CM 2

CRN 75-21-8  
 CMF C2 H4 O



IC ICM C23G005-06  
 NCL 134040000  
 CC 76-14 (Electric Phenomena)  
 Section cross-reference(s): 49  
 ST stabilization silicate **soln** electronic circuit  
**cleaning**  
 IT Alcohols, uses  
 (C12-15, ethoxylated, **cleaning solns.** contg.  
 Nedol 25-7, for electronic circuit assemblies, silicate  
 stabilization in)  
 IT Alcohols, uses  
 (C12-15, ethoxylated propoxylated, **cleaning**  
**solns.** contg., for electronic circuit assemblies,  
 silicate stabilization in)  
 IT Alcohols, uses  
 (C16-18, ethoxylated, **cleaning solns.** contg.,  
 for electronic circuit assemblies, silicate stabilization in)  
 IT Alcohols, uses  
 (C4-10, ethoxylated propoxylated, **cleaning**  
**solns.** contg., for electronic circuit assemblies,  
 silicate stabilization in)  
 IT **Electric circuits**  
 (printed, boards, cleaning of, stabilization  
 of silicate solns. for)  
 IT 152624-13-0, Silicon sodium oxide (Si<sub>3</sub>.1Na<sub>2</sub>O<sub>7</sub>.2)  
 (**cleaning solns.** contg., for electronic  
 circuit assemblies, silicate stabilization)  
 IT 144-55-8, Sodium bicarbonate, uses 149-30-4, Benzothiazolethiol

298-14-6, Potassium bicarbonate 497-19-8, Sodium carbonate anhydrous, uses 584-08-7, Potassium carbonate 1310-58-3, **Potassium hydroxide**, uses 1310-73-2, **Sodium hydroxide**, uses 1312-76-1, Kasil 1  
 1984-06-1, Sodium octanoate 5968-11-6, Sodium carbonate monohydrate 6834-92-0, Sodium metasilicate 7320-34-5, Potassium pyrophosphate 7601-54-9, Trisodium phosphate 7758-29-4, Sodium tripolyphosphate 9003-01-4, Polyacrylic acid 9003-04-7, Sodium polyacrylate 9003-39-8, Polyvinylpyrrolidone 9004-32-4, Sodium carboxymethylcellulose 9004-62-0, Hydroxyethyl cellulose 9005-38-3, Keltone LV 11138-66-2, Xanthan gum 13845-36-8, Potassium tripolyphosphate 14047-60-0 39316-51-3, Plurafac RA30 54193-36-1, Sodium polymethacrylate 106392-12-5, Pluronic 17R4 133687-11-3, Polytergent CS-1 156187-33-6  
 (cleaning solns. contg., for electronic circuit assemblies, silicate stabilization in)

L56 ANSWER 14 OF 18 HCA COPYRIGHT 2002 ACS  
 120:313759 Aqueous electronic circuit assembly **cleaner** and method. Winston, Anthony E.; Cala, Francis R.; Vinci, Alfredo; LaJoie, M. Stephen (Church and Dwight Co., Inc., USA). U.S. US 5234506 A 19930810, 18 pp. Cont.-in-part of U.S. Ser. No. 731,512, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1992-896660 19920610. PRIORITY: US 1991-731512 19910717.  
 AB Described are environmentally safe aq. **comps.** for **cleaning** electronic circuit assemblies, such as **printed circuit** or **printed wiring boards**, during their fabrication. Alkali metal carbonate and bicarbonate salts are utilized with an alkali metal silicate to achieve a variety of objectives, among which are the removal of solder flux, oils, waxes, and greasy substances, adhesives and other residues as well as provide anti-corrosion protection and metal brightening.  
 IT 1310-58-3, **Potassium hydroxide**, uses  
 1310-73-2, **Sodium hydroxide**, uses  
 106392-12-5, Pluronic 17R4  
 (cleaning soln. contg., for electronic circuit assemblies)  
 RN 1310-58-3 HCA  
 CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

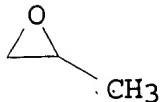
K-OH

RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na-OH

RN 106392-12-5 HCA  
 CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O

CM 2

CRN 75-21-8  
CMF C2 H4 O

IC ICM C23G005-06  
 NCL 134040000  
 CC 76-14 (Electric Phenomena)  
 Section cross-reference(s): 49  
 ST aq electronic circuit assembly **cleaner**  
 IT Alcohols, compounds  
     (C12-15, ethoxylated, **cleaning soln.** contg.  
     Nedol 25-7, for electronic circuit assemblies)  
 IT Alcohols, compounds  
     (C12-15, ethoxylated propoxylated, **cleaning**  
     **soln.** contg., for electronic circuit assemblies)  
 IT Alcohols, compounds  
     (C16-18, ethoxylated, **cleaning soln.** contg.,  
     for electronic circuit assemblies)  
 IT Alcohols, compounds  
     (C4-10, ethoxylated propoxylated, **cleaning soln**  
     . contg., for electronic circuit assemblies)  
 IT **Electric circuits**  
     (printed, boards, **cleaning of**,  
     **solns.** for)  
 IT 144-55-8, Sodium bicarbonate, uses 149-30-4, Benzothiazolethiol  
 497-19-8, Sodium carbonate anhydrous, uses 584-08-7, Potassium  
 carbonate 1310-58-3, **Potassium hydroxide**  
     , uses 1310-73-2, **Sodium hydroxide**,  
     uses 1312-76-1, Potassium silicate 1984-06-1, Sodium octanoate  
 5968-11-6, Sodium carbonate monohydrate 6834-92-0, Sodium  
 metasilicate 7320-34-5, Potassium pyrophosphate 7601-54-9,  
 Trisodium phosphate 9003-01-4, Polyacrylic acid 9003-04-7,  
 Sodium polyacrylate 9004-32-4, Sodium carboxymethylcellulose  
 13845-36-8, Potassium tripolyphosphate 14047-60-0 39316-51-3,

Plurafac RA30 106392-12-5, Pluronic 17R4 133687-11-3,  
 Polytergent CS-1 152624-13-0, Silicon sodium oxide (Si<sub>3</sub>.1Na2O7.2)  
 (cleaning soln. contg., for electronic  
 circuit assemblies)

L56 ANSWER 15 OF 18 HCA COPYRIGHT 2002 ACS

106:129167 A practical electron beam direct writing process technology for submicron device fabrication. Okazaki, Shinji; Murai, Fumio; Suga, Osamu; Shiraishi, Hiroshi; Koibuchi, Shigeru (Cent. Res. Lab., Hitachi Ltd., Kokubunji, 185, Japan). Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures, 5(1), 402-4 (English) 1987. CODEN: JVTBD9. ISSN: 0734-211X.

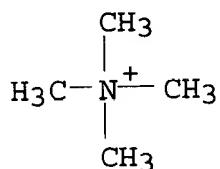
AB A phenolic resin based resist and an improved development process is proposed for a practical direct writing technol. High resoln., high sensitivity, and high dry **etching** durability are required for this type of technol. Phenolic resin based resist has the capability of high dry **etching** durability, and also shows high resoln. because of swell-free development. To obtain higher sensitivity, a dissoln. inhibitor and a nonionic surfactant were added to the conventional developer soln. MRS(RD2000N) and NPR(RE5000P) were chosen as phenolic resin based resists. Using an improved developer soln., 0.25 .mu.m resoln. and 7-9 .mu.C/cm<sup>2</sup>. sensitivity were obtained at 30 kV acceleration in MRS and 0.4 .mu.m and 2 .mu.C/cm<sup>2</sup> in NPR. This practical direct writing process technol. was applied to the fabrication of a W gate MOSFETs with 0.12 .mu.m effective channel length and 0.2 .mu.m wide emitter bipolar **transistors**.

IT 75-59-2, Tetramethylammoniumhydroxide 9003-11-6

(electron-beam direct writing process for submicron device fabrication using phenolic resin-based resist and improved development process with soln. contg.)

RN 75-59-2 HCA

CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



● OH<sup>-</sup>

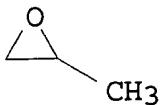
RN 9003-11-6 HCA

CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9

CMF C3 H6 O



CM 2

CRN 75-21-8  
CMF C2 H4 O

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 ST electron beam writing **semiconductor** device; lithog  
 electron resist process direct writing; development resist process  
**semiconductor** device  
 IT **Semiconductor** devices  
 (submicron, electron-beam direct writing process technol. for  
 fabrication of, using phenolic resin-based resist and improved  
 development process)  
 IT 75-59-2, Tetramethylammoniumhydroxide 9003-11-6  
 (electron-beam direct writing process for submicron device  
 fabrication using phenolic resin-based resist and improved  
 development process with soln. contg.)

L56 ANSWER 16 OF 18 HCA COPYRIGHT 2002 ACS  
 105:65172 Metallization of ceramics. DeLuca, Michael A.; McCormack,  
 John F. (Kollmorgen Technologies Corp., USA). U.S. US 4574094 A  
 19860304, 10 pp. Cont.-in-part of U.S. Ser. No. 502,748, abandoned.  
 (English). CODEN: USXXAM. APPLICATION: US 1984-611193 19840521.  
 PRIORITY: US 1983-502748 19830609.

AB Printed circuits on ceramic substrates are  
 manufd. by sequentially treating the ceramic surface with (1) a melt  
 of .gtoreq.1 alkali metal compd. to adhesion-promote or **etch**  
 the surface, (2) an ethoxylated or N-contg. adsorption promoter,  
 e.g., an amine oxide, and (3) a catalyst for electroless metal  
 deposition. Metal is then deposited on the surface and partially  
 removed, e.g., by masking and **etching**, to create a  
 printed circuit conductor pattern. Thus, an Al2O3  
 substrate was alkali-washed, **rinsed**, and dipped in aq.  
 NaOH and dried to form a NaOH surface layer which  
 was melted at 450.degree. to roughen and adhesion-promote the  
 surface. After **rinsing**, the substrate was treated with a  
 surfactant adsorption promoter consisting of aq. tallow  
 betaine-nonylphenoxypolyethoxyethanol-ethanolamine. Finally, the

substrate was treated with catalysts (SnCl<sub>2</sub> and PdCl<sub>2</sub>) and coated with Cu by immersion in an electroless plating bath. The resulting Cu layer was uniformly adherent, vs. a Cu layer on substrate not treated with surfactant, which exhibited "skip plating", i.e. portions of the surface were not covered.

IT 1310-73-2, uses and miscellaneous  
(adhesion promoter, in electroless metalization of ceramic substrates, for **printed circuit** manuf.)

RN 1310-73-2 HCA

CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na—OH

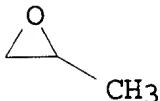
IT 9003-11-6  
(copper plating solns. contg., ceramic substrate metalization by, in **printed circuit** manuf.)

RN 9003-11-6 HCA

CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C<sub>3</sub> H<sub>6</sub> O



CM 2

CRN 75-21-8  
CMF C<sub>2</sub> H<sub>4</sub> O



IC ICM B05D005-12  
NCL 427096000  
CC 57-2 (Ceramics)  
Section cross-reference(s): 56

ST **printed circuit** electroless plating adhesion;  
substrate ceramic surface treatment metal adhesion

IT Amides, uses and miscellaneous  
Amino acids, uses and miscellaneous  
Betaines  
Pyridinium compounds  
Quaternary ammonium compounds, uses and miscellaneous

(adsorption promoters, ceramic substrates treated with, for electroless metalization, in **printed circuit** manuf.)

IT Alkali metals, compounds  
(compds., adhesion promoters, in electroless metalization of ceramic substrates, for **printed circuit** manuf.)

IT Group IB elements  
Group VIII elements  
(electroless plating with, of ceramic substrates, for **printed circuit** manuf.)

IT Ceramic materials and wares  
(metalization of, electroless, surface treatment for good adhesion in, for **printed circuit** manuf.)

IT Alcohols, uses and miscellaneous  
(amino, adsorption promoters, ceramic substrates treated with, for electroless metalization, in **printed circuit** manuf.)

IT Coating process  
(electroless, metalization, of ceramic substrates, surface treatment for adhesion promotion in, in **printed circuit** manuf.)

IT **Electric circuits**  
(**printed**, manuf. of, by electroless metalization of ceramic substrates, surface treatment for good adhesion in)

IT 1310-73-2, uses and miscellaneous  
(adhesion promoter, in electroless metalization of ceramic substrates, for **printed circuit** manuf.)

IT 9016-45-9  
(adsorption promoter, ceramic substrates treated with, for electroless metalization, in **printed circuit** manuf.)

IT 141-43-5, properties  
(adsorption promoter, ceramic substrates treated with, for electroless metalization, in **printed circuit** manuf.)

IT 113-00-8D, derivs.  
(adsorption promoters, ceramic substrates treated with, for electroless metalization, in **printed circuit** manuf.)

IT 7647-10-1 7772-99-8, uses and miscellaneous  
(catalysts, in electroless metalization of ceramic substrates, for **printed circuit** manuf.)

IT 50-00-0, uses and miscellaneous 102-60-3 143-33-9 1312-73-8  
2492-26-4 3425-46-5 9003-11-6  
(copper plating solns. contg., ceramic substrate metalization by, in **printed circuit** manuf.)

IT 7447-39-4, uses and miscellaneous 7758-98-7, uses and  
miscellaneous  
(electroless plating by solns. of, of ceramic substrates, surface treated for adhesion promotion, in **printed circuit** manuf.)

IT 89338-54-5  
 (electroless plating of ceramic substrates with, surface treatment for adhesion promotion in, in **printed circuit** manuf.)

IT 7440-50-8, uses and miscellaneous  
 (electroless plating with, of ceramic substrates, for **printed circuit** manuf.)

IT 7440-02-0, uses and miscellaneous 7440-57-5, uses and miscellaneous  
 (electroplating with, of copper-coated ceramic substrates, in **printed circuit** manuf.)

IT 50-70-4, uses and miscellaneous 64-02-8 64-17-5, uses and miscellaneous 108-46-3, uses and miscellaneous 142-71-2  
 853-68-9 7647-01-0, uses and miscellaneous 7647-14-5, uses and miscellaneous 7789-45-9 16872-11-0  
 (in surface treatment of ceramic substrates, for adhesion promotion of metal films, in **printed circuit** manuf.)

IT 24968-99-8  
 (resist, in copper plating of **printed circuits** on ceramic substrates)

IT 7775-27-1  
 (solvent, for removal of polymeric resists in **printed circuit** manuf.)

L56 ANSWER 17 OF 18 HCA COPYRIGHT 2002 ACS

105:64919 Copper plating for **electric circuits**.

Kikuchi, Hiroshi; Watabe, Makio; Tanaka, Isamu; Oka, Hitoshi (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61003883 A2 19860109 Showa, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-121748 19840615.

AB An inorg. compd. of a Group IVA element is added to a Cu chem. plating soln. consisting of Cu<sup>2+</sup> ion, a complexing agent for Cu<sup>2+</sup> ion, a reducing agent for Cu<sup>2+</sup> ion, an alkali metal **hydroxide**, and a poly(oxyethylene) surfactant to give a Cu chem. plating soln. A cationic surfactant may also be added to the solns. The plating solns. perform Cu plating by complete autocatalytic reaction to prevent deposition of Cu on insulating materials, and they are useful for prep. **elec. circuits** including **printed circuit boards**. Thus, a glass-epoxy substrate was laminated with Cu foil on both surfaces, drilled to produce through-holes (1 mm diam.), activated by treating with a Sn-Pd type catalyst, surface coated with a resist to form resist patterns, **etched** to remove exposed Cu foil, freed from the resist patterns to form **elec. circuits**, and immersed in a plating soln. composed of CuSO<sub>4</sub>.5H<sub>2</sub>O; the disodium salt of EDTA, NaOH (pH 12.3), aq. 37 wt.% formalin, .alpha.,.alpha.'-dipyridyl, polyethylene glycol stearylamine, Na<sub>2</sub>SiO<sub>3</sub>.9H<sub>2</sub>O, and water to be plated with Cu. The **printed circuit board** showed no extraordinary Cu deposition between circuit paths.

IT 1310-73-2, uses and miscellaneous 9003-11-6  
 (copper plating soln. contg. Group IVA compds. and, for  
 elec. circuit prepn.)

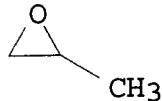
RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na—OH

RN 9003-11-6 HCA  
 CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
 CMF C3 H6 O



CM 2

CRN 75-21-8  
 CMF C2 H4 O



IC ICM C23C018-40  
 ICS H05K003-18; H05K003-42  
 CC 56-6 (Nonferrous Metals and Alloys)  
 Section cross-reference(s): 38, 76  
 ST copper plating soln **printed circuit**  
 IT **Electric circuits**  
 (copper plating soln. contg. Group IVA compds. for prepn. of)  
 IT Group IVA element compounds  
 (copper plating soln. contg., for **elec. circuit**  
 prepn.)  
 IT Siloxanes and Silicones, uses and miscellaneous  
 (polyoxyethylene-polyoxypropylene-, copper plating soln. contg.  
 Group IVA compds. and, for **elec. circuit**  
 prepn.)  
 IT **Electric circuits**  
 (**printed**, copper plating soln. contg. Group IVA compds.  
 for prepn. of)  
 IT 50-00-0, properties 57-09-0 139-33-3 366-18-7  
 1310-73-2, uses and miscellaneous 9002-92-0

9003-11-6 9014-85-1 26635-92-7 31017-83-1 35483-61-5  
 (copper plating soln. contg. Group IVA compds. and, for  
 elec. circuit prepn.)

IT 1310-53-8, properties 6834-92-0  
 (copper plating soln. contg., for elec. circuit  
 prepn.)

IT 75-21-8D, polymers with methyloxirane and siloxanes 75-56-9D,  
 polymers with oxirane and siloxanes  
 (graft, copper plating soln. contg. Group IVA compds. and, for  
 elec. circuit prepn.)

IT 7440-50-8, uses and miscellaneous  
 (plating of, soln. contg. Group IVA compds. for, for elec  
 . circuit prepn.)

L56 ANSWER 18 OF 18 HCA COPYRIGHT 2002 ACS  
 74:145697 Copper plating baths. Jonker, Hendrik; Molenaar, Arian;  
 Geertsema, Eise B. (N. V. Philips' Gloeilampenfabrieken). Ger.  
 Offen. DE 2049061 19710429, 42 pp. (German). CODEN: GWXXBX.

PRIORITY: NL 19691016.

AB The title bath useful in the prepn. of conductive coatings on  
 activated hard paper or glass plates contained CuSO<sub>4</sub> 0.028-0.050,  
 complexing agents 0.03-0.20, NaOH 0.10-0.30, HCHO  
 0.12-0.19 mole/l., and 1 or more polyoxyalkylene compds., e.g.  
 carbowax compds. or polyethoxylated fatty amines. Thus, a hard  
 paper photochem. activated with Ag was coated with a 20 .mu.m thick  
 ductile Cu layer in a bath at 50.degree. contg. CuSO<sub>4</sub>.5H<sub>2</sub>O 0.028,  
 tetra-Na ethylenediaminetetraacetate 0.030, HCHO 0.13, NaOH  
 0.10, and polyethylene glycol .apprx.0.1 mole/l.

IT 1310-73-2, uses and miscellaneous  
 (in coatings, with copper)

RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

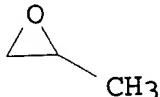
Na-OH

IT 9003-11-6  
 (surfactants, in coating with copper)

RN 9003-11-6 HCA  
 CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
 CMF C<sub>3</sub> H<sub>6</sub> O



CM 2

CRN 75-21-8  
CMF C2 H4 O

O

IC C23C  
CC 56 (Nonferrous Metals and Alloys)  
IT Photographic emulsions  
(for photoetching, of copper coatings in **printed circuit** manuf.)  
IT **Etching**  
(photo-, of copper coatings in **printed circuit** manuf.)  
IT **Electric circuits**  
(**printed**, coating with copper in manuf. of)  
IT Coating process  
(with copper, in **printed circuit** manuf.)  
IT Lactic acid, cadmium salt (2:1)  
Lissapol N  
(in photographic emulsions, for **etching** of copper  
coatings on paper coated with nitrile rubber-phenol condensation  
product mixts.)  
IT 50-00-0, uses and miscellaneous 60-00-4, uses and miscellaneous  
**1310-73-2**, uses and miscellaneous  
(in coatings, with copper)  
IT 55-55-0  
(in photodeveloping baths, for **etching** of copper  
coatings on nonmetals in **printed circuit**  
manuf.)  
IT 50-21-5, uses and miscellaneous 77-92-9, uses and miscellaneous  
814-80-2 7440-22-4, uses and miscellaneous 7697-37-2, uses and  
miscellaneous 7761-88-8, uses and miscellaneous 10415-75-5  
(in photographic emulsions, for **etching** of copper  
coatings on paper coated with nitrile rubber-phenol condensation  
product mixts.)  
IT 5284-61-7  
(photographic emulsions contg., for **etching** of copper  
coatings on paper coated with nitrile rubber-phenol condensation  
product mixt.)  
IT **9003-11-6** 9007-63-0  
(surfactants, in coating with copper)

=&gt; d 157 1-9 cbib abs hitstr hitind

L57 ANSWER 1 OF 9 HCA COPYRIGHT 2002 ACS  
136:344151 Salt-based catalyst bath for substrate surface activation in

electroless metalization. Merricks, David; Goosey, Martin T.; Bains, Narinder (Shipley Company LLC, USA). Eur. Pat. Appl. EP 1201787 A2 20020502, 9 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-308995 20011023. PRIORITY: GB 2000-25989 20001024.

AB The aq. bath for local surface activation in electroless coating contains: (a) Cu or Pd salts; (b) Cu-complexing agents, preferably carboxylic acids; (c) org. binders, typically as cellulose polymers; (d) reducing agents (esp. hypophosphorous acid); and (e) NaOH or a similar base for alk. pH. The catalyst bath is suitable for depositing electroless metal seed layers, and for enhancing the discontinuous seed layers. The catalyst bath is suitable for local activation of **elec. printed-circuit boards, integrated circuits, or Si-semiconductor wafers**, esp. for electroless coating with Cu optionally followed by electroplating. The typical aq. bath contains CuCl<sub>2</sub> 3, tartaric acid 2, hydroxypropylcellulose 11, hypophosphorous acid 25, and 13M KOH 4 g/L.

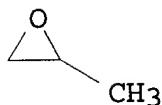
IT 9003-11-6  
(binders, catalytic bath with; aq. salt catalyst bath for local surface activation in electroless metalization)

RN 9003-11-6 HCA

CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O



CM 2

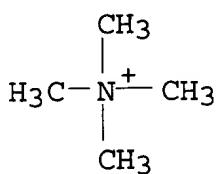
CRN 75-21-8  
CMF C2 H4 O



IT 75-59-2, Tetramethylammonium hydroxide  
1310-58-3, Potassium hydroxide, uses  
(catalytic bath with; aq. salt catalyst bath for local surface activation in electroless metalization)

RN 75-59-2 HCA

CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)

● OH<sup>-</sup>

RN 1310-58-3 HCA

CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

K-OH

IC ICM C23C018-28

CC 56-6 (Nonferrous Metals and Alloys)

Section cross-reference(s): 76

ST catalyst activation aq salt bath metalization; elec  
circuit metalization aq catalyst bath

IT Integrated circuits

(metalization of, catalytic bath in; aq. salt catalyst bath for  
local surface activation in electroless metalization)IT 9002-89-5, Poly(vinyl alcohol) 9003-11-6 9004-34-6,  
Hydroxycellulose, uses 9004-62-0, Hydroxyethylcellulose  
9004-64-2, Hydroxypropylcellulose 25087-26-7, Polymethacrylic acid  
37353-59-6, Hydroxymethylcellulose  
(binders, catalytic bath with; aq. salt catalyst bath for local  
surface activation in electroless metalization)

IT 75-59-2, Tetramethylammonium hydroxide

141-53-7, Sodium formate 1310-58-3, Potassium

hydroxide, uses 6303-21-5, Hypophosphorous acid

7447-39-4, Copper dichloride, uses 7647-10-1, Palladium dichloride

7681-53-0, Sodium hypophosphite

(catalytic bath with; aq. salt catalyst bath for local surface  
activation in electroless metalization)

IT 7440-21-3, Silicon, processes

(semiconductor, metalization of; aq. salt catalyst bath  
for local surface activation in electroless metalization)

L57 ANSWER 2 OF 9 HCA COPYRIGHT 2002 ACS

136:119594 Transparent epoxy resin compositions containing quaternary  
ammonium hydroxides for packaging optical semiconductor  
devices. Nakasuji, Ikuo; Yamanaka, Hiroshi; Kushida, Takanori  
(Matsushita Electric Works, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP  
2002030133 A2 20020131, 7 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 2000-215169 20000714.

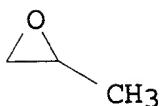
AB The compn. comprises (A) an epoxy resin, (B) a curing agent, (C) a crosslinking catalyst, (D) a mold release agent and (E) a quaternary ammonium hydroxide R4N+OH- (R = Me, Et, tert-Bu, Pr, isopropyl). Thus, 85.21 parts Epikote 1004 (epoxy resin) was mixed with Rikacid THPA (tetrahydronaphthalic acid anhydride) 11.84, 1-benzyl-2-phenylimidazole 1.94, AO 50 (antioxidant) 0.5, **tetramethylammonium hydroxide** 0.01 and E 10 (erucic acid amide), melt kneaded at 80.degree., ground and molded to give a test piece showing Tg 107.degree., light transmission (600-900 nm)  $\geq 90\%$  and good moldability.

IT 9003-11-6D, Ethylene oxide-propylene oxide copolymer, monoalkyl ether (release agent; transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

RN 9003-11-6 HCA  
CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O



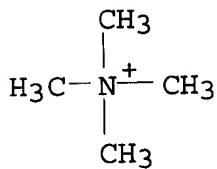
CM 2

CRN 75-21-8  
CMF C2 H4 O



IT 75-59-2, **Tetramethylammonium hydroxide** (transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

RN 75-59-2 HCA  
CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



● OH<sup>-</sup>

IC ICM C08G059-56  
 ICS C08K005-20; C08L063-00; H01L023-29; H01L023-31; H01L031-02;  
 H01L033-00

CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 73, 76

ST epoxy resin potting optical **semiconductor** device;  
 quaternary ammonium hydroxide curing catalyst epoxy

IT Epoxy resins, uses  
 (crosslinked; transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

IT Polyoxyalkylenes, uses  
 (ethers, release agents; transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

IT Quaternary ammonium compounds, uses  
 (hydroxides; transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

IT Parting materials  
 (mold-release agents; transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

IT Semiconductor devices  
 (optical; transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

IT Crosslinking catalysts  
 Parting materials  
 Transparent materials  
 (transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

IT 112-84-5, Erucic acid amide  
 (E 10, release agent; transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

IT 9003-11-6D, Ethylene oxide-propylene oxide copolymer,  
 monoalkyl ether  
 (release agent; transparent epoxy resin compns. contg. quaternary

ammonium hydroxides for packaging optical **semiconductor** devices)

IT 75-59-2, **Tetramethylammonium hydroxide**  
 37734-89-7, 1-Benzyl-2-phenylimidazole  
 (transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

IT 85-43-8D, Rikacid THPA, polymers with epoxy resins 25068-38-6D, Epikote 1004, polymers with epoxy resin and hexahydrophthalic acid anhydride 28825-96-9D, TEPIIC-S, polymers with epoxy resin and hexahydrophthalic acid anhydride 63215-53-2 108057-16-5  
 (transparent epoxy resin compns. contg. quaternary ammonium hydroxides for packaging optical **semiconductor** devices)

L57 ANSWER 3 OF 9 HCA COPYRIGHT 2002 ACS

122:320762 Synthetic diamond-based polishing suspension for **semiconductors**. Komarov, Vitaly Fedorovich; Sakovich, Gennady Viktorovich; Petrov, Evgeny Anatolievich; Klimov, Anatoly Valentinovich; Kostjukov, Sergei Ivanovich; Baraboshkin, Konstantin Sergeev (Nauchno-Proizvodstvennoe Obiedinenie "Altai", Russia). PCT Int. Appl. WO 9422970 A1 19941013, 18 pp. DESIGNATED STATES: W: BY, CA, JP, UA, US; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Russian). CODEN: PIXXD2. APPLICATION: WO 1994-RU68 19940401. PRIORITY: RU 1993-12940 19930402.

AB The invention concerns a polishing compd. for giving a superfinish to surfaces, contg. 5-10% of an abrasive component suspended and a liq. medium. The abrasive component is a synthetic diamond-contg. material with specified properties in which the primary particles are 4-6 nm in size and combine to form aggregates of 20-500 nm in size, with sp. surface areas of 250-450 m<sup>2</sup>/g and pore vol. of 0.6-1.0 cm<sup>3</sup>/g. A typical compn. contained the above abrasive material 5-10, glycerol or diethylene glycol 10-15, H<sub>2</sub>O<sub>2</sub> 5-15, ethylenediamine 0.1-1.0, and KOH or NaOH 1-3% in H<sub>2</sub>O.

IT 1310-58-3, **Potassium hydroxide**, uses  
 1310-73-2, **Sodium hydroxide**, uses  
 9003-11-6, Ethylene oxide-Propylene oxide copolymer  
 (synthetic diamond-based polishing suspension for **semiconductors**)

RN 1310-58-3 HCA  
 CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

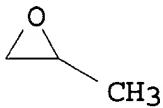
K—OH

RN 1310-73-2 HCA  
 CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na—OH

RN 9003-11-6 HCA  
 CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O

CM 2

CRN 75-21-8  
CMF C2 H4 O

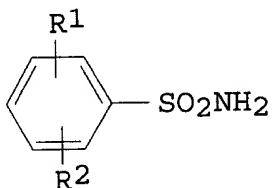
IC G09G001-02; C09G001-08  
 CC 57-6 (Ceramics)  
 IT Polishing materials  
     (synthetic diamond-based polishing suspension for  
     **semiconductors**)  
 IT Petrolatum  
     Waxes and Waxy substances  
     (synthetic diamond-based polishing suspension for  
     **semiconductors**)  
 IT Polishing  
     (chem.-mech., synthetic diamond-based polishing suspension for  
     **semiconductors**)  
 IT Alcohols, uses  
     (long-chain, ethoxylated, synthetic diamond-based polishing  
     suspension for **semiconductors**)  
 IT 148-24-3, 8-Hydroxyquinoline, uses  
     (satd. aq. soln.; synthetic diamond-based polishing suspension  
     for **semiconductors**)  
 IT 56-81-5, Glycerol, uses 107-15-3, Ethylenediamine, uses  
 111-46-6, Diethylene glycol, uses 112-80-1, Oleic acid, uses  
 1310-58-3, Potassium hydroxide, uses  
 1310-73-2, Sodium hydroxide, uses  
 7631-86-9, Aerosil, uses 7722-84-1, Hydrogen peroxide, uses  
 9003-11-6, Ethylene oxide-Propylene oxide copolymer  
 11099-07-3, Stearin 12751-48-3, Syntanol 25322-68-3D,  
 Polyethylene glycol, ethers, with fatty alc. 31566-31-1, Glycerol  
 monostearate  
     (synthetic diamond-based polishing suspension for  
     **semiconductors**)  
 IT 7782-40-3, Diamond, uses

## (synthetic; synthetic diamond-based polishing suspension for semiconductors)

L57 ANSWER 4 OF 9 HCA COPYRIGHT 2002 ACS

113:106458 Photosensitive vinyl polymer composition containing sulfonamide and polyether glycol and its laminated element. Tanaka, Yoji; Kamio, Kenji; Furubayashi, Hiromi; Masaoka, Kazutaka (Hitachi Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02084653 A2 19900326 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-236957 19880921.

GI



AB The title compn. contg. 100 parts of a 40/60-80/20 mixt. of a polymer giving film properties and a vinyl compd., 0.5-10 parts of an arom. sulfonamide I (R<sub>1</sub>, R<sub>2</sub> = H, C<sub>1</sub>toreq.4 alkyl, C<sub>1</sub>toreq.4 alkoxy, OH, NO<sub>2</sub>), 0.2-10 parts of a polyether glycol, 0.2-10 parts of an org. halogen-contg. compd., and 0.5-10 parts of a sensitizer or its system creating free radicals under active light irradn., is laminated with a support to give the title element. The resist compn. and the element, useful for manuf. of a **printed circuit board**, shows adhesion to the substrate and removability after curing. Thus, a compn. comprising Me methacrylate-methacrylic acid-2-ethylhexyl acrylate copolymer, methyl Cellosolve, tetraethylene glycol diacrylate, BPE 10, benzophenone, 4,4'-dimethylaminobenzophenone, leuco crystal violet, bis(tribromophenyl) sulfone, malachite green, p-toluenesulfonamide, and Voranol CP 1421 (ethylene oxide-propylene oxide copolymer) was applied onto a Lumirror support film, dried, and overcoated with a polyethylene film to give the title element. Then, the element was laminated with a Cu-clad substrate after removal of the overcoating film, neg. patternwise irradiated, and aq. Na<sub>2</sub>CO<sub>3</sub>-developed after removal of the support to give a resist, which was treated with aq. NaOH to show no residue on the Cu surface.

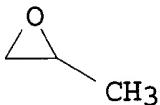
IT 9003-11-6, Ethylene oxide-propylene oxide copolymer (photoresist contg., for **printed** elc. **circuit** fabrication, Voranol CP 1421)

RN 9003-11-6 HCA  
CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9

CMF C3 H6 O



CM 2

CRN 75-21-8  
CMF C2 H4 O

IC ICM G03F007-085  
 ICS G03F007-004; G03F007-027; G03F007-029  
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 ST photoresist laminate adhesion metal substrate; vinyl polymer  
 photoresist polyether glycol; **printed circuit**  
 photoresist removability sulfonamide; copper clad substrate  
 photoresist  
 IT 70-55-3 17831-71-9, Tetraethylene glycol diacrylate 25133-98-6  
 25190-06-1 41637-38-1 128744-19-4  
 (photoresist contg., for **printed elc. circuit**  
 fabrication)  
 IT 9003-11-6, Ethylene oxide-propylene oxide copolymer  
 (photoresist contg., for **printed elc. circuit**  
 fabrication, Voranol CP 1421)  
 IT 25038-59-9, Lumirror, uses and miscellaneous  
 (support from, for vinyl polymer photoresist, for **printed**  
**elec. circuit** fabrication)

L57 ANSWER 5 OF 9 HCA COPYRIGHT 2002 ACS  
 111:217069 Lubricating fluids for slicing silicon ingots. Payne,  
 Charles C.; Kerr, Ernest M. (Nalco Chemical Co., USA). U.S. US  
 4853140 A 19890801, 4 pp. Cont. of U.S. Ser. No. 87,844, abandoned.  
 (English). CODEN: USXXAM. APPLICATION: US 1989-312012 19890216.  
 PRIORITY: US 1987-87844 19870821.

AB A lubricant compn. for use in slicing or cutting **Si**  
**wafers** contains a soap, a P-contg. compd. (as low-temp.  
 extreme-pressure lubricant), and an ethylene oxide-propylene oxide  
 copolymer (as high-temp. extreme-pressure lubricant), e.g., Ucon  
 EPML-X. Suitable soaps include C6-18 fatty acids reacted with  
 triethanolamine or aminoethanolamine. Addnl., biocides or  
 fungicides may be added. Also an antifoam and a complexing aid such  
 as EDTA may be used.  
 IT 1310-58-3, **Potassium hydroxide**, uses and

miscellaneous 1310-73-2, Sodium hydroxide, uses and miscellaneous 9003-11-6, Ethylene oxide-propylene oxide copolymer (lubricants contg., aq., for slicing silicon wafers)

RN 1310-58-3 HCA  
CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

K—OH

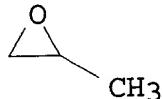
RN 1310-73-2 HCA  
CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na—OH

RN 9003-11-6 HCA  
CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O



CM 2

CRN 75-21-8  
CMF C2 H4 O



IC ICM C10M173-00  
NCL 252034000  
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)  
Section cross-reference(s): 76  
ST lubricant silicon wafer cutting; extreme pressure phosphorus compd lubricant; ethylene propylene oxide silicon cutting lubricant; soap EDTA silicon cutting lubricant  
IT Metaphosphates  
Phosphates, uses and miscellaneous (extreme-pressure additives, for aq. lubricants, for cutting of silicon wafers)

IT Diphosphates  
(extreme-pressure additives, for aq. lubricants, for cutting silicon wafers)

IT Lubricants  
(cutting, contg. soaps-phosphorus compd. and ethylene oxide-propylene oxide copolymer, for cutting of silicon wafers)

IT Lubricating oil additives  
(extreme-pressure, phosphorus-contg. compds. and ethylene oxide-propylene oxide copolymer, for cutting silicon wafers)

IT 56573-04-7, Grotan  
(biocide, lubricants contg., aq., for slicing silicon wafers)

IT 60-00-4, EDTA, uses and miscellaneous  
(complexing agent, lubricants contg., aq., for slicing silicon wafers)

IT 15922-78-8, Sodium omadine  
(fungicide, lubricants contg., aq., for slicing silicon wafers)

IT 334-48-5, Capric acid 1310-58-3, Potassium hydroxide, uses and miscellaneous 1310-73-2, Sodium hydroxide, uses and miscellaneous  
9003-11-6, Ethylene oxide-propylene oxide copolymer  
(lubricants contg., aq., for slicing silicon wafers)

IT 102-71-6D, reaction products with C6-18 fatty acids 111-41-1D, reaction products with C6-18 fatty acids 111-42-2D, reaction products with C6-18 fatty acids 141-43-5D, Monoethanolamine, reaction products with C6-18 fatty acids  
(soaps, lubricants contg., aq., for slicing silicon wafers)

IT 7440-21-3, Silicon, uses and miscellaneous  
(wafers, cutting of, lubricants for)

L57 ANSWER 6 OF 9 HCA COPYRIGHT 2002 ACS  
110:217642 Water-washable fluid flux for soldering electronic components with tin-lead alloy or tin solders. Montewski, Wlodzimierz; Burczyk, Lidia; Krasodomski, Michal; Weideman, Elzbieta (Zaklady Elektroniczne "Elwro", Pol.; Przedsiebiorstwo Wdrazania i Upowszechniania Postepu Technicznego i Organizacyjnego "Posteor"). Pol. PL 143464 B1 19880229, 6 pp. Abstracted and indexed from the unexamined application. (Polish). CODEN: POXXA7. APPLICATION: PL 1984-247968 19840531.

AB The soldering flux consists of ethoxylated and/or propoxylated nonylphenol 50-70, poly(ethylene glycol) (mol. wt. 1500) 10-40, and 1:(0.5-2):(1-4) corrosion inhibitor mixt. of unsatd. C11-12 fatty acids, 4-methyl-2,6-ditert-butylphenol (I), and styrenated cresol 1-10%. The flux provides high-quality joints, is easily removable with water, and is useful for printed elec. circuits and electronic elements. Thus, a soldering flux consisting of alkoxylated nonylphenol 66.5, poly(ethylene glycol)

28.5, unsatd. fatty acids 1, I 2, and styrenated cresol 2%, and having a kinematic viscosity of 20.62 mm<sup>2</sup>/s at 100.degree. flammability point >250.degree., and acid no. 2.12 mg KOH /g was used for soldering of 1200 elec. circuit boards at 250.degree.. After rinsing with an aq. surfactant soln., the amt. of residue on the boards was only 1.5%.

IT 9082-01-3

(soldering flux contg., for printed elec. circuits)

RN 9082-01-3 HCA

CN Oxirane, methyl-, polymer with oxirane, nonylphenyl ether (9CI) (CA INDEX NAME)

CM 1

CRN 25154-52-3

CMF C15 H24 O

CCI IDS



D1-OH

D1-(CH<sub>2</sub>)<sub>8</sub>-Me

CM 2

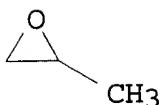
CRN 9003-11-6

CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)x

CCI PMS

CM 3

CRN 75-56-9

CMF C<sub>3</sub> H<sub>6</sub> O

CM 4

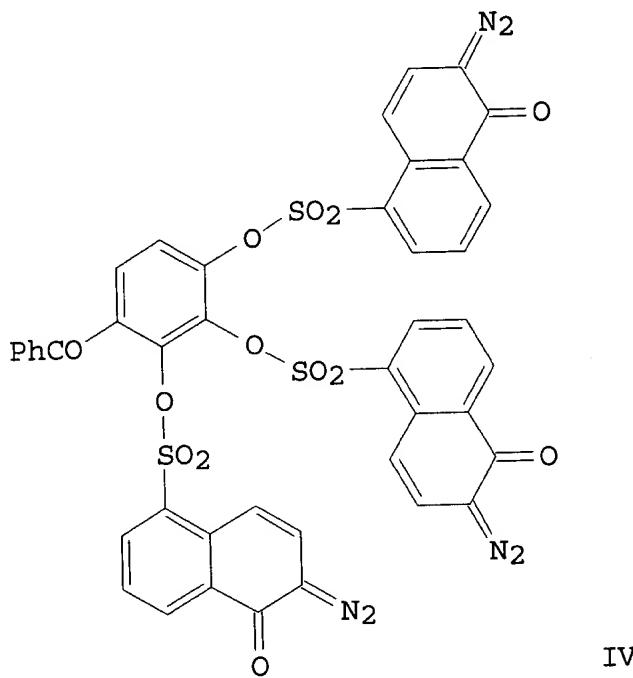
CRN 75-21-8  
CMF C2 H4 O

O

IC ICM B23K035-34  
CC 56-9 (Nonferrous Metals and Alloys)  
Section cross-reference(s): 76  
ST soldering flux **elec printed circuit**  
IT Soldering  
    (fluxes, for **printed elec. circuits**  
    )  
IT **Electric circuits**  
    (**printed**, soldering flux for)  
IT 100-42-5D, reaction products with cresol 128-37-0, uses and  
miscellaneous 1319-77-3D, Cresol, reaction products with styrene  
9016-45-9, Polyethylene glycol nonylphenyl ether 9064-15-7  
**9082-01-3** 25322-68-3  
    (soldering flux contg., for **printed elec.**  
    **circuits**)  
IT 7440-31-5, Tin, uses and miscellaneous 11110-87-5  
    (soldering with, of **printed elec.**  
    **circuits**, flux for)

L57 ANSWER 7 OF 9 HCA COPYRIGHT 2002 ACS  
106:205237 Developers for positive-working photoresist compositions.  
Miura, Konoe; Ochiai, Tameichi; Kameyama, Yasuhiro; Tanaka, Che  
(Mitsubishi Chemical Industries Co., Ltd., Japan). Jpn. Kokai  
Tokkyo Koho JP 61167948 A2 19860729 Showa, 5 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1985-8731 19850121.

GI



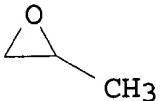
AB The title developers are composed of a basic compd. and a surfactant 10-10000 ppm selected from polyoxyethylene nonylphenyl ether (I), oxyethylene-oxypropylene block copolymer, polyoxyethylene lauryl ether, and lauryl betaine. The developers do not yield development residue when used for pos.-working photoresist compns. consisting of a naphthoquinonediazide-type photosensitive compd. and a condensate of HCHO with a mixt. of phenolic compds. contg. at least m-cresol (II) and p-cresol (III). Thus, a **Si wafer** was spin-coated with a layer composed of a novolak resin (prepd. by reaction of II, III, oxalic acid, and HCHO for 1 h at 95.degree.) 3.0 and IV 0.435 part, patternwise exposed to light, developed with an aq. soln. contg. **Me4NOH** and I, and **rinsed** with H2O to give patterns with line and space resolns. of 2 and 1 .mu.m, resp., on which no development residues were noted.

IT **106392-12-5**  
(developers contg. basic compd. and, for naphthoquinone diazide-phenolic resin pos. photoresists)

RN **106392-12-5 HCA**  
CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O

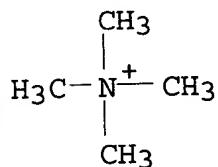


CM 2

CRN 75-21-8  
CMF C2 H4 O

IT 75-59-2, **Tetramethylammonium hydroxide**  
 (surfactant, developers contg., for naphthoquinone  
 diazide-phenolic resin pos. photoresists)

RN 75-59-2 HCA  
 CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)

● OH<sup>-</sup>

IC ICM G03C005-24  
 ICS G03C001-72; G03F007-08  
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)

IT 683-10-3, Lauryl betaine 9002-92-0, Polyoxyethylene lauryl ether  
 9016-45-9, Polyoxyethylene nonyl phenyl ether 106392-12-5  
 (developers contg. basic compd. and, for naphthoquinone  
 diazide-phenolic resin pos. photoresists)

IT 75-59-2, **Tetramethylammonium hydroxide**  
 (surfactant, developers contg., for naphthoquinone  
 diazide-phenolic resin pos. photoresists)

L57 ANSWER 8 OF 9 HCA COPYRIGHT 2002 ACS  
 102:208065 Electroless copper coating solution. Kikuchi, Hiroshi;  
 Tomizawa, Akira; Oka, Hitoshi (Hitachi, Ltd., Japan). Eur. Pat.  
 Appl. EP 132594 A1 19850213, 56 pp. DESIGNATED STATES: R: DE, NL.  
 (English). CODEN: EPXXDW. APPLICATION: EP 1984-107191 19840622.

PRIORITY: JP 1983-134328 19830725; JP 1983-233599 19831213.

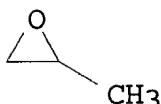
AB An electroless bath suitable for coating with a high-strength Cu contains: (a) Cu<sup>2+</sup> salt, esp. CuSO<sub>4</sub>; (b) complexing agent for Cu<sup>2+</sup>, esp. EDTA.2Na [139-33-3] 15-200 g/L or equiv.; (c) a reducing agent such as HCHO [50-00-0] or equiv.; (d) pH control additive, esp. NaOH, for pH 11-13.5; (e) surfactant of the poly(oxyethylene) type, esp. contg. amines; (f) complexing agent for Cu<sup>+</sup>; and (g) novel addn. of inorg. compds. contg. Si, Ge, and/or V, optionally with a cationic surfactant. Novel addn. of the g compds. promotes the bath stability, and increases the strength of Cu coating. Thus, an electroless bath was prep'd. with 0.048 M CuSO<sub>4</sub> 0.096 M EDTA.2Na, 0.037 M HCHO, 1.2 .times. 10-4 M .alpha.,.alpha.'-dipyridyl [366-18-7], org. surfactant stearylamine poly(oxyethylene) diether [96387-74-5] at 2.2 .times. 10-4 M, and 10 mM Na<sub>2</sub>SiO<sub>3</sub>. The bath was stable for 100 h. The Cu coating was deposited at 0.5-3 .mu./h, and showed tensile strength 53 kg/mm<sup>2</sup> with 6% elongation. Without the silicate compd. the tensile strength was only 34 kg/mm<sup>2</sup> and elongation 8%, and the bath was unstable. Addn. of GeO<sub>2</sub> was suitable in a similar bath. Addn. of hexadecyltrimethylammonium bromide [57-09-0] at 1.4 .times. 10-4 M as a cationic surfactant improved the bath stability, esp. in Cu deposition on epoxy resin substrate for **printed elec.-circuit boards**.

IT 9003-11-6 11111-34-5 56449-04-8  
(electroless bath contg., copper from stable, tensile strength of)

RN 9003-11-6 HCA  
CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O



CM 2

CRN 75-21-8  
CMF C2 H4 O



RN 11111-34-5 HCA  
CN Oxirane, methyl-, polymer with oxirane, ether with

(1,2-ethanediylidinitrilo)tetrakis[propanol] (4:1) (9CI) (CA INDEX NAME)

CM 1

CRN 78524-11-5  
 CMF C14 H32 N2 O4  
 CCI IDS

(n-Pr)<sub>2</sub>N—CH<sub>2</sub>—CH<sub>2</sub>—N(Pr-n)<sub>2</sub>

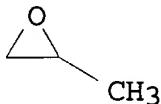
4 (D1—OH)

CM 2

CRN 9003-11-6  
 CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)x  
 CCI PMS

CM 3

CRN 75-56-9  
 CMF C<sub>3</sub> H<sub>6</sub> O



CM 4

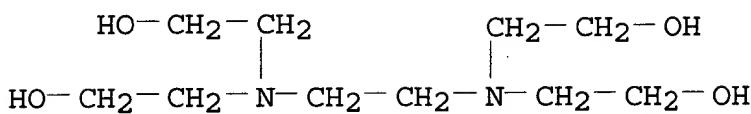
CRN 75-21-8  
 CMF C<sub>2</sub> H<sub>4</sub> O



RN 56449-04-8 HCA  
 CN Oxirane, methyl-, polymer with oxirane, ether with  
 2,2',2'',2'''-(1,2-ethanediylidinitrilo)tetrakis[ethanol] (4:1) (9CI)  
 (CA INDEX NAME)

CM 1

CRN 140-07-8  
 CMF C10 H24 N2 O4

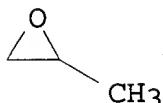


CM 2

CRN 9003-11-6  
 CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)x  
 CCI PMS

CM 3

CRN 75-56-9  
 CMF C<sub>3</sub> H<sub>6</sub> O



CM 4

CRN 75-21-8  
 CMF C<sub>2</sub> H<sub>4</sub> O



IT 11111-34-5  
 (graft, electroless bath contg., copper from stable)  
 RN 11111-34-5 HCA  
 CN Oxirane, methyl-, polymer with oxirane, ether with  
 (1,2-ethanediyl)dinitrilo)tetraakis[propanol] (4:1) (9CI) (CA INDEX  
 NAME)

CM 1

CRN 78524-11-5  
 CMF C<sub>14</sub> H<sub>32</sub> N<sub>2</sub> O<sub>4</sub>  
 CCI IDS

$(n-Pr)_2N-CH_2-CH_2-N(Pr-n)_2$

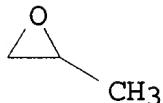
4 (D1-OH)

CM 2

CRN 9003-11-6  
 CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O)x  
 CCI PMS

CM 3

CRN 75-56-9  
 CMF C<sub>3</sub> H<sub>6</sub> O



CM 4

CRN 75-21-8  
 CMF C<sub>2</sub> H<sub>4</sub> O



IC ICM C23C018-40  
 CC 56-6 (Nonferrous Metals and Alloys)  
 Section cross-reference(s): 76  
 IT **Electric circuits**  
 (printed, boards, copper on, electroless bath  
 for high-strength)  
 IT 7440-56-4D, inorg. compds. 7440-62-2D, inorg. compds. 7631-86-9,  
 properties 7664-38-2D, poly(oxyethylene) esters 7758-98-7,  
 properties 9002-92-0 **9003-11-6** 9005-00-9 9014-85-1  
 9036-19-5 **11111-34-5** 16576-98-0 25322-68-3  
 25322-68-3D, derivs. 26027-38-3 26635-78-9 26635-92-7  
 27774-13-6 **56449-04-8** 78567-77-8 81775-68-0  
 96387-73-4  
 (electroless bath contg., copper from stable, tensile strength  
 of)

IT 11111-34-5

(graft, electroless bath contg., copper from stable)

L57 ANSWER 9 OF 9 HCA COPYRIGHT 2002 ACS

80:134462 Heat transfer agent composition. Howell, Edward R.; Wood, Harold B., Jr.; Sayad, Richard S. (Dow Chemical Co.). U.S. US 3779927 19731218, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1971-137589 19710426.

AB Ethylenediamine (I) [107-15-3]-initiated ethylene oxide-propylene oxide copolymer (II) [9003-11-6] (liq., mol. wt. 3500) contg. potassium phosphate [7778-53-2] buffer was heated at 400-50.deg.F and sprayed on electronic **circuit boards** during manuf. to melt and remove excess tin-lead solder. The II compn. had good heat stability. Thus, 64 lb propylene oxide (III) was added to 16 lb I during 15 hr at 80-5.deg.C and < 40 psig and then freed of volatiles at 120.deg.C in vacuo. This product (60 lb) was mixed with 3 lb KOH, treated with 765 lb 75:25 ethylene oxide-III during 20 hr at .sim. 95.deg.C and < 40 psig, heated to 120.deg. C in vacuo to remove volatiles, treated at 80.deg.C with superphosphoric acid (105 % of theor.) to neutralize KOH, mixed with 0.5 % phenothiazine, and used to melt excess solder from 1500 **circuit boards** without odor or smoke formation.

IT 9003-11-6

(heat-stable, for solder removal by melting)

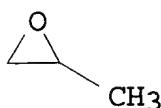
RN 9003-11-6 HCA

CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9

CMF C3 H6 O



CM 2

CRN 75-21-8

CMF C2 H4 O



IC C09K

NCL 252075000

CC 37-3 (Plastics Fabrication and Uses)

ST heat transfer agent polyoxyalkylene; **circuit board**  
solder removal; polyalkylene glycol solder removal; thermal  
stability polyalkylene glycol

IT **Electric circuits**  
(printed, solder removal from, polyalkylene glycols  
for)

IT Solders  
(removal, from **elec. circuit boards**  
, polyalkylene glycols for)

IT **9003-11-6**  
(heat-stable, for solder removal by melting)